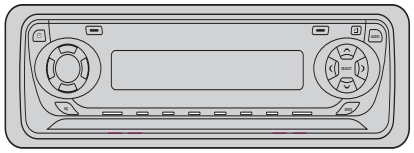
Pioneer sound.vision.soul

Service Manual



DEH-P440/XN/UC

ORDER NO.
CRT2771

MULTI-CD CONTROL HIGH POWER CD PLAYRE WITH FM/AM TUNER

DEH-P440/XN/UC
DEH-P4400/XN/UC
DEH-P44/XN/UC

COMPACT disc DIGITAL AUDIO

This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech.Module	Remarks
CX-977	CRT2624	S9	CD Mech. Module:Circuit Description,Mech. Description,Disassembly

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For details, refer to "Important symbols for good services" on the next page.

PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER EUROPE NV Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

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K-ZZU.2001.printed in Japan

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

● CD Player Service Precautions

1. For pickup unit(CXX1480) handling, please refer to"Disassembly"(see page 48).
   During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a jumper-solder).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the pickup unit(see page 42).
4. In this product, because the memory capacity of the microcomputer is insufficient, the test mode is not installed. However grating of the pickup unit can be confirmed.

1. SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

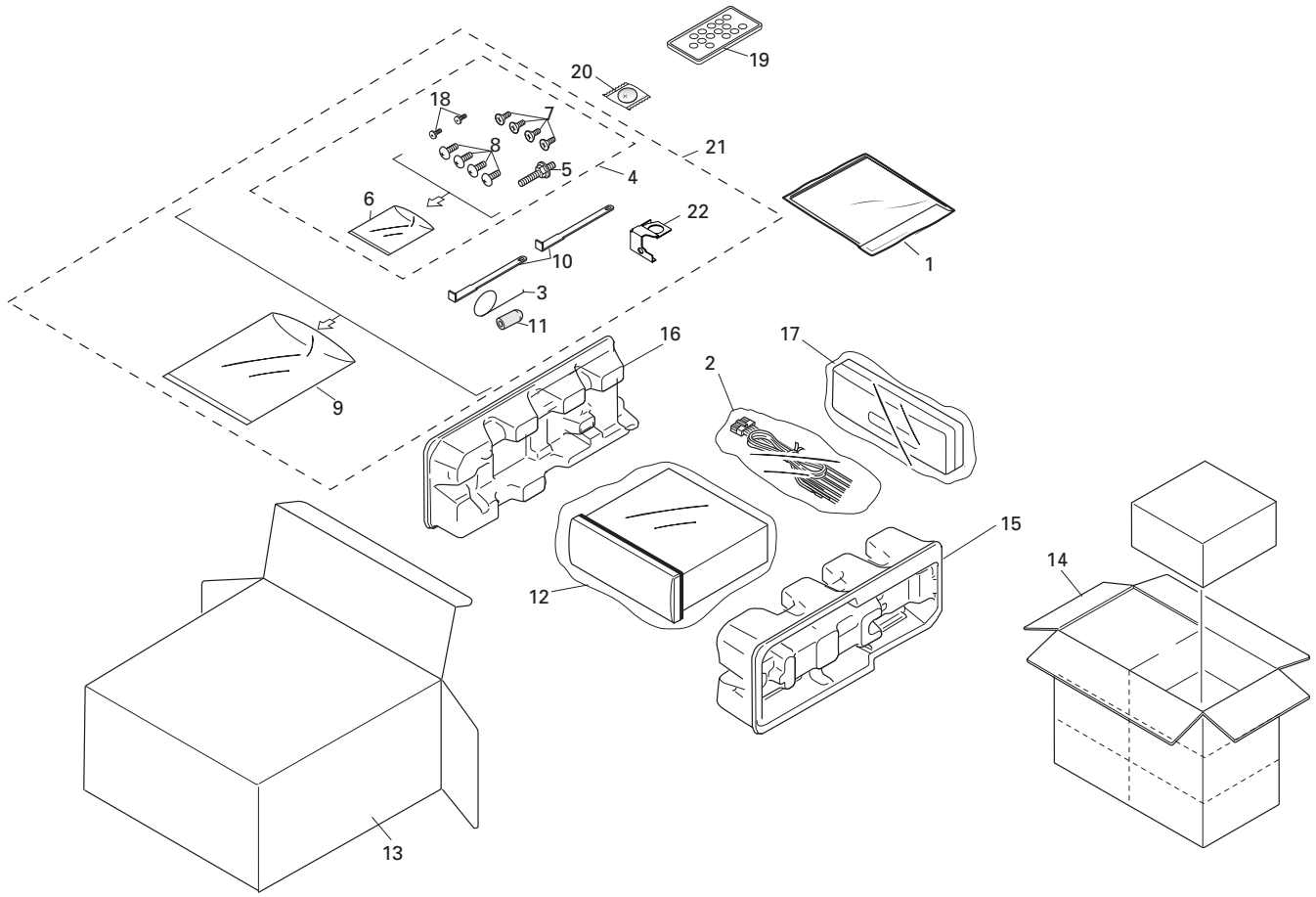
WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

2. EXPLODED VIEWS AND PARTS LIST

NOTES : • Parts marked by "" are generally unavailable because they are not in our Master Spare Parts List.*
• Screw adjacent to ▽ mark on the product are used for disassembly.
• For the applying amount of lobricants or glue, follow the instructions in this manual.
(In the case of no amount instructions,apply as you think it appropriate.)

2.1 PACKING



PACKING PARTS LIST

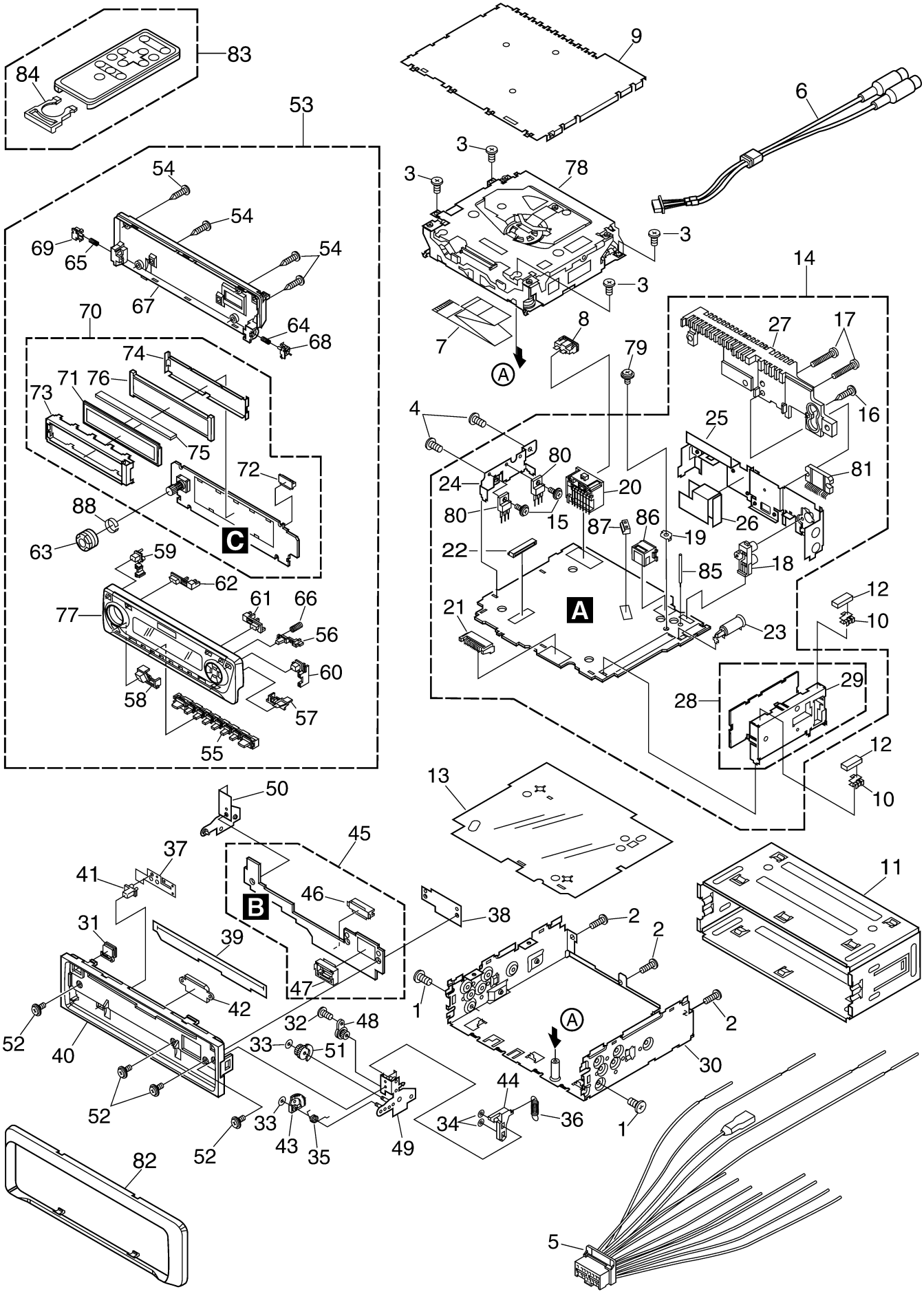
Mark	NO	Symbol and Description	DEH-P440/XN/UC	DEH-P4400/XN/UC	DEH-P44/XN/UC
	1-1	Owner's Manual	CRD3542	CRD3543	CRD3543
	1-2	Installation Manual	CRD3556	CRD3557	CRD3557
*	1-3	Card	Not used	ARY1048	ARY1048
*	1-4	Warranty Card	CRY1070	Not used	Not used
	1-5	Polyethylene Bag	CEG1116	CEG1116	CEG1116
	2	Cord Assy	CDE6436	CDE6436	CDE6436
	3	Spring	CBH1650	CBH1650	CBH1650
	4	Screw Assy	CEA2796	CEA2796	CEA2796
	5	Screw	CBA1002	CBA1002	CBA1002
*	6	Polyethylene Bag	CEG-127	CEG-127	CEG-127

Mark	NO	Symbol and Description	DEH-P440/XN/UC	DEH-P4400/XN/UC	DEH-P44/XN/UC
	7	Screw	CRZ50P090FMC	CRZ50P090FMC	CRZ50P090FMC
	8	Screw	TRZ50P080FMC	TRZ50P080FMC	TRZ50P080FMC
*	9	Polyethylene Bag	CEG-158	CEG-158	CEG-158
	10	Handle	CNC5395	CNC5395	CNC5395
	11	Bush	CNV3930	CNV3930	CNV3930
	12	Polyethylene Bag	CEG1173	CEG1173	CEG1173
	13	Carton	CHG4557	CHG4553	CHG4556
	14	Contain Box	CHL4557	CHL4553	CHL4556
	15	Protector	CHP2251	CHP2251	CHP2251
	16	Protector	CHP2252	CHP2252	CHP2252
	17	Case Assy	CXB3520	CXB3520	Not used
	18	Screw	BPZ20P060FZK	BPZ20P060FZK	BPZ20P060FZK
	19	Remote Control Unit	CXB8743	CXB8743	CXB6797
*	20	Battery	CEX1065	CEX1065	CEX1065
	21	Accessory Assy	CEA2773	CEA2773	CEA2773
	22	Earth Plate	CNC9450	CNC9450	CNC9450

Owner's Manual,Installation Manual

Part No.	Language
CRD3542, CRD3543, CRD3556, CRD3557	English, French,Spanish

2.2 EXTERIOR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(1)EXTERIOR PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ30P040FZK
	2	Screw	BMZ30P100FMC
	3	Screw	BSZ26P060FMC
	4	Screw	BSZ30P060FMC
	5	Cord Assy	CDE6436
	6	Cord Assy	CDE6494
	7	Cable	CDE6610
	8	Fuse(10A)	CEK1136
	9	Case	CNB2686
	10	Holder	CNC5704
	11	Holder	CNC8659
	12	Cushion	CNM4870
	13	Insulator	CNM6948
	14	Tuner Amp Unit	See Contrast table(2)
	15	Screw	ASZ26P060FMC
	16	Screw	BPZ26P120FMC
	17	Screw	BSZ26P160FMC
	18	Pin Jack(CN351)	CKB1035
	19	Holder(CN403)	CNC5399
	20	Plug(CN901)	CKM1330
	21	Plug(CN750)	CKS3537
	22	Connector(CN501)	CKS3835
	23	Antenna Jack(CN402)	CKX1056
	24	Holder	CNC8615
	25	Holder	CNC9470
	26	Insulator	CNM6949
	27	Heat Sink	CNR1583
	28	FM/AM Tuner Unit	CWE1563
	29	Holder	CNC8815
	30	Chassis Unit	CXB6100
	31	Button	CAC6839
	32	Screw(M2x2)	CBA1176
	33	Washer	CBF1038
	34	Washer	CBF1039
	35	Spring	CBH2428
	36	Spring	CBH2429
	37	Spring	CBL1512
	38	Holder	CNC9096
	39	Cover	CNM6854
	40	Panel	CNS6278
	41	Pin	CNV6486
	42	Lighting Conductor	CNV6487
	43	Gear	CNV6507
	44	Arm	CNV6508
	45	Panel Unit	CWM7375
	46	Socket(CN1950)	CKS3550
	47	Connector(CN1951)	CKS4206
	48	Damper Unit	CXB5070
	49	Holder Unit	CXB6356
	50	Holder Unit	CXB6357
	51	Clutch Unit	CXB6358
	52	Screw	IMS20P045FZK
	53	Detach Grille Assy	See Contrast table(2)
	54	Screw	BPZ20P100FZK
	55	Button(1-6,SOURCE)	CAC7225
	56	Button(OPEN)	CAC7227
	57	Button(SFEQ)	CAC7221
	58	Button(EQ)	CAC7231
	59	Button(CLK)	CAC7233
	60	Button(AUDIO)	CAC7234
	61	Button(LOCAL)	CAC7235
	62	Button(BSM)	CAC7236
	63	Knob	See Contrast table(2)
	64	Spring	CBH2430
	65	Spring	CBH2431
	66	Spring	CBH2630
	67	Cover	CNS6740
	68	Holder	CNV6505
	69	Holder	CNV6506
	70	Keyboard Unit	See Contrast table(2)
	71	LCD	CAW1628
	72	Connector(CN1901)	CKS4524
	73	Holder	CNC9053
	74	Sheet	CNM7647
	75	Connector	CNV6440
	76	Lighting Conductor	CNV6441
	77	Sub Grille Assy	See Contrast table(2)
	78	CD Mechanism Module(S9ANA)	CXK5501
	79	Screw	ISS26P055FUC
	80	Transistor(Q510,Q910)	2SD2396
	81	IC(IC361)	PAL007A
	82	Panel	CNS6935
	83	Remote Control Unit	CXB8743
	84	Cover	CNS7068
	85	Clamper	CEF1007
	86	Connector(CN701)	CKS3408
	87	Connector(CN331)	CKS3598
	88	Spring	CBL1470

(2) CONTRAST TABLE

DEH-P440/XN/UC, DEH-P4400/XN/UC and DEH-P44/XN/UC are constructed the same except for the following:

Mark	NO	Symbol and Description	DEH-P440/XN/UC	DEH-P4400/XN/UC	DEH-P44/XN/UC
	14	Tuner Amp Unit	CWM8015	CWM8014	CWM8014
	53	Detach Grille Assy	CXB8406	CXB8407	CXB8408
	63	Knob	CAA2725	CAA2699	CAA2699
	70	Keyboard Unit	CWM8308	CWM8308	CWM8310
	77	Sub Grille Assy	CXB8614	CXB8615	CXB8616

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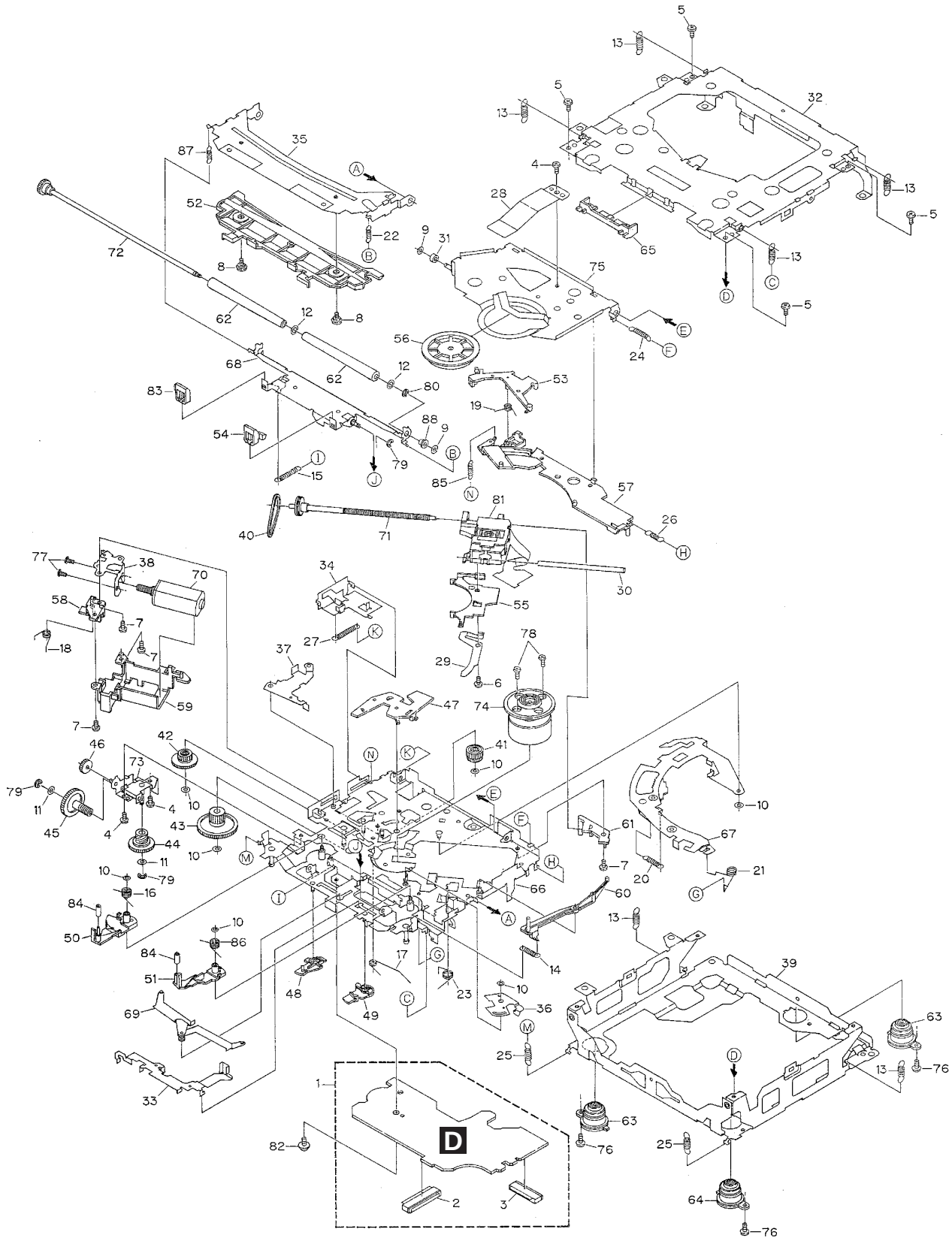
2.3 CD MECHANISM MODULE

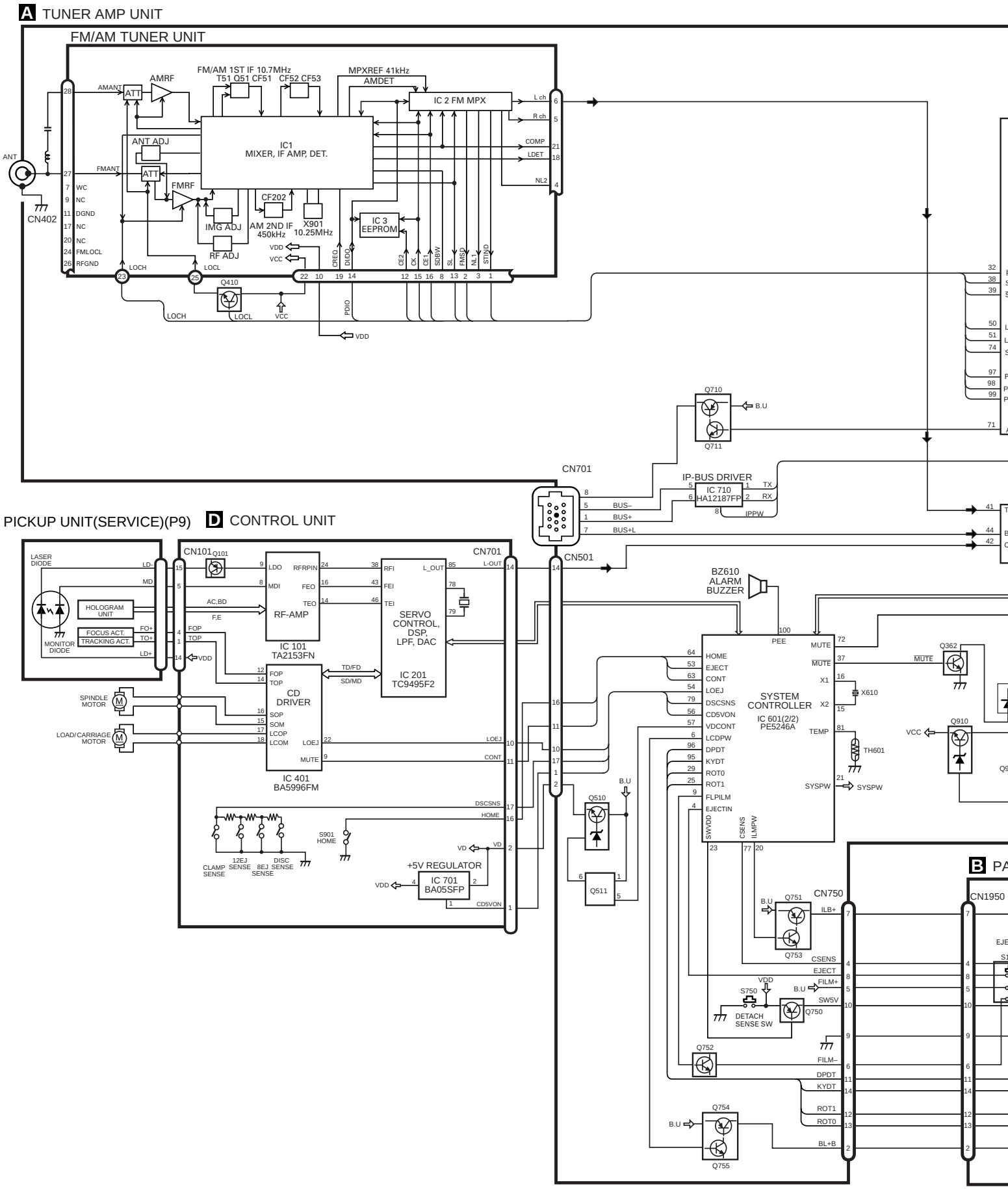


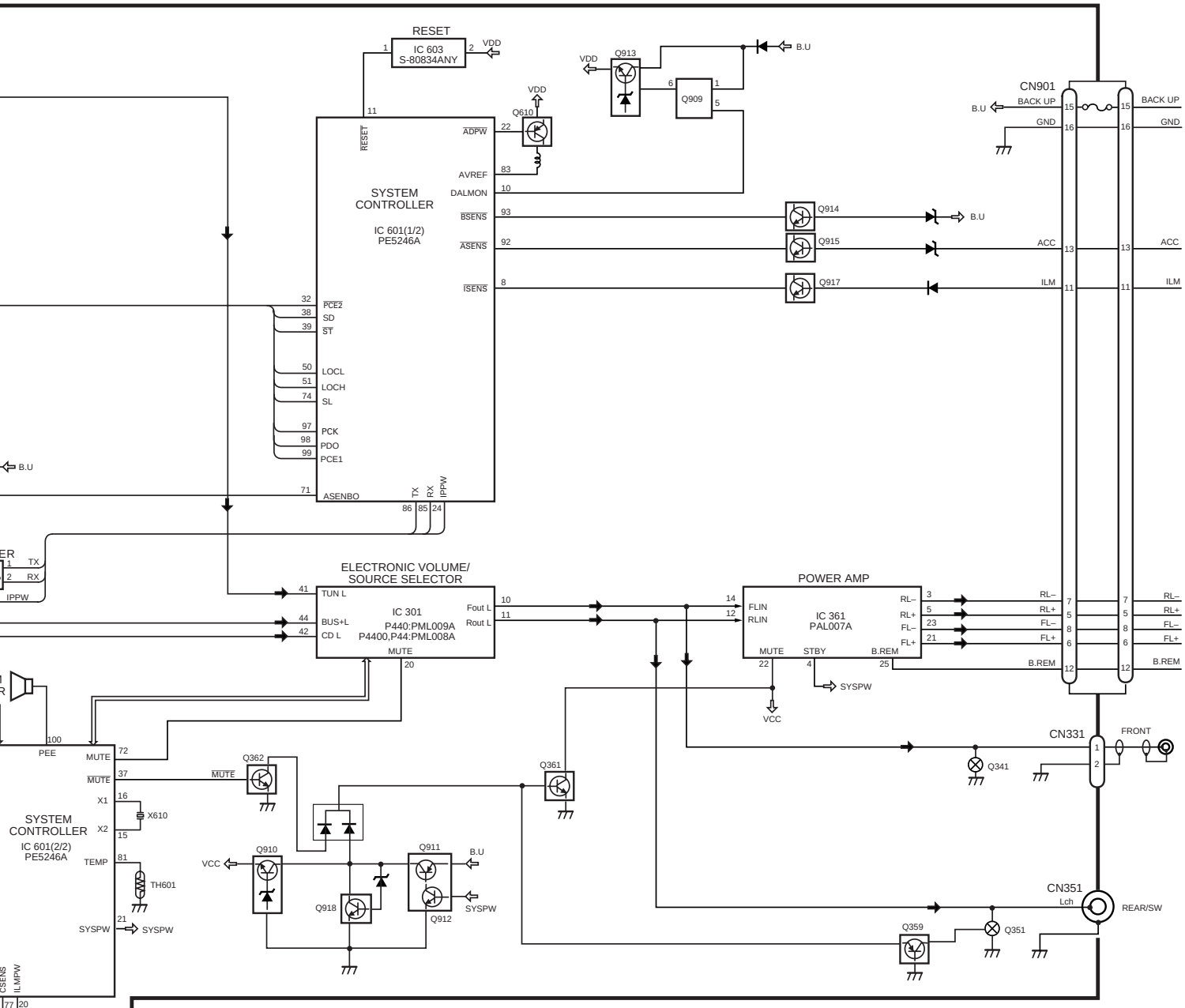
CD MECHANISM MODULE PARTS LIST

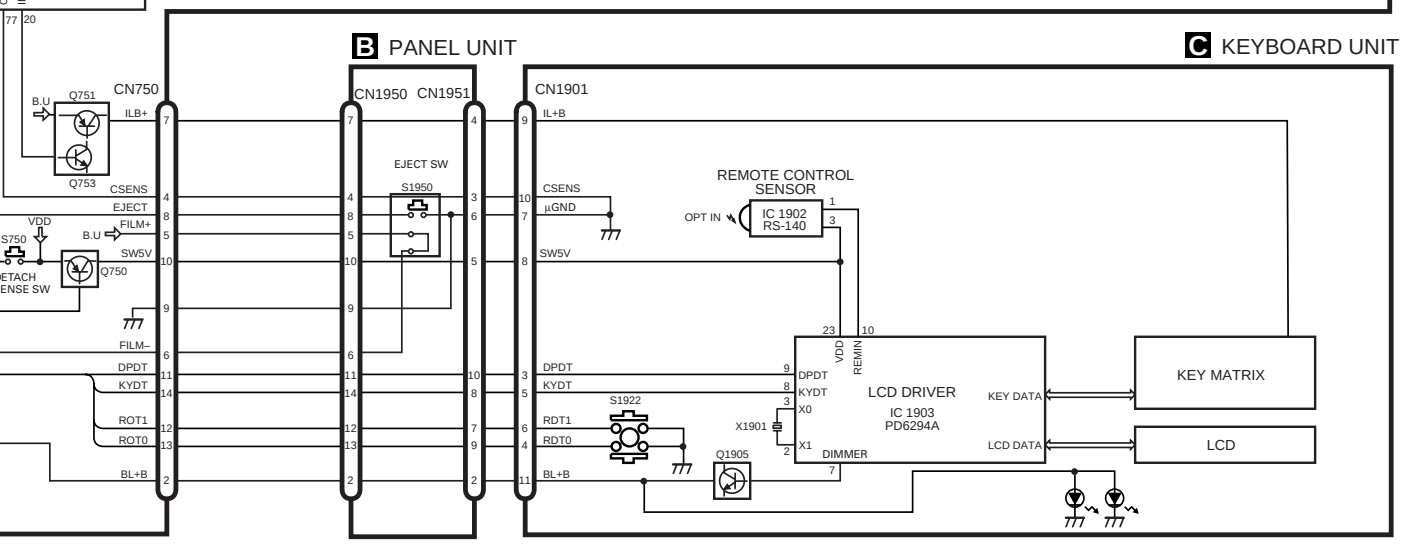
Mark	No.	Description	Part No.
	1	Control Unit	CWX2481
	2	Connector(CN701)	CKS1959
	3	Connector(CN101)	CKS3486
	4	Screw	BMZ20P025FMC
	5	Screw	BSZ20P040FMC
	6	Screw(M2x4)	CBA1362
	7	Screw(M2x3)	CBA1527
	8	Screw	CBA1545
	9	Washer	CBF1037
	10	Washer	CBF1038
	11	Washer	CBF1039
	12	Washer	CBF1060
	13	Spring	CBH2378
	14	Spring	CBH2379
	15	Spring	CBH2514
	16	Spring	CBH2533
	17	Spring	CBH2382
	18	Spring	CBH2383
	19	Spring	CBH2384
	20	Spring	CBH2527
	21	Spring	CBH2386
	22	Spring	CBH2537
	23	Spring	CBH2390
	24	Spring	CBH2391
	25	Spring	CBH2523
	26	Spring	CBH2426
	27	Spring	CBH2444
	28	Spring	CBL1561
	29	Spring	CBL1553
	30	Shaft	CLA3845
	31	Roller	CLA3910
	32	Frame	CNC9654
	33	Lever	CNC9664
	34	Lever	CNC8949
	35	Arm	CNC9661
	36	Arm	CNC9016
	37	Arm	CNC9017
	38	Bracket	CNC9123
	39	Frame	CNC9656
	40	Belt	CNT1086
	41	Gear	CNV6886
	42	Gear	CNV6316
	43	Gear	CNV6317
	44	Gear	CNV6318
	45	Gear	CNV6319
	46	Gear	CNV6320
	47	Arm	CNV6322
	48	Arm	CNV6323
	49	Arm	CNV6324
	50	Arm	CNV6888
	51	Arm	CNV6889
	52	Guide	CNV6327
	53	Arm	CNV6924
	54	Guide	CNV6921
	55	Rack	CNV6923
	56	Clamper	CNV6331
	57	Arm	CNV6332
	58	Guide	CNV6333
	59	Cover	CNV6334
	60	Arm	CNV6335
	61	Guide	CNV6336
	62	Roller	CNV6338
	63	Damper	CNV6339
	64	Damper	CNV6340
	65	Guide	CNV6925
	66	Chassis Unit	CXB7980
*	67	Arm Unit	CXB7983
	68	Arm Unit	CXB7984
	69	Arm Unit	CXB7985
	70	Motor Unit(M2)	CXB5903
	71	Screw Unit	CXB5904
	72	Gear Unit	CXB8076
	73	Bracket Unit	CXB7982
	74	Motor Unit(M1)	CXB6007
	75	Arm Unit	CXB8504
	76	Screw(M2x5)	EBA1028
	77	Screw	JFZ20P020FMC
	78	Screw	JGZ17P020FZK
	79	Washer	YE15FUC
	80	Washer	YE20FUC
	81	Pickup Unit(Service)(P9)	CXX1480
	82	Screw	IMS26P030FMC
	83	Guide	CNV6922
	84	Roller	CNV6887
	85	Spring	CBH2509
	86	Spring	CBH2512
	87	Spring	CBH2536
	88	Collar	CNV6906

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

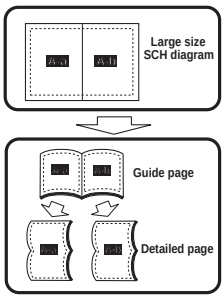



RESET
IC 603
S-80834ANY
VDD
Q913
Q909
B.U
Q610
CN901
BACK UP
GND
SYSTEM
CONTROLLER
IC 601(1/2)
PE5246A
RESET
ADPW
AVREF
DALMON
BSENS
ASENS
ISENS
Q914
Q915
Q917
ACC
ILM
PCE2
SD
ST
LOCL
LOCH
SL
PCK
PDO
PCE1
ASENBO
TX
RX
IPPW
ELECTRONIC VOLUME/
SOURCE SELECTOR
IC 301
P440:PML009A
P4400,P44:PML008A
TUN L
BUS+L
CD L
MUTE
Fout L
Rout L
POWER AMP
IC 361
PAL007A
FLIN
RLIN
RL–
RL+
FL–
FL+
B.REM
STBY
SYSPW
VCC
CN331
FRONT
Q341
PEE
Q362
Q361
SYSTEM
CONTROLLER
IC 601(2/2)
PE5246A
X610
TEMP
TH601
Q910
Q911
Q918
Q912
CN351
Lch
REAR/SW
Q359
Q351


B PANEL UNIT
C KEYBOARD UNIT
CN750
CN1950 CN1951
CN1901
Q751
Q753
ILB+
IL+B
CSENS
EJECT
FILM+
SW5V
FILM–
DPDT
KYDT
ROT1
ROT0
BL+B
EJECT SW
S1950
µGND
REMOTE CONTROL
SENSOR
OPT IN
IC 1902
RS-140
S750
DETACH
SENSE SW
Q750
S1922
Q1905
LCD DRIVER
IC 1903
PD6294A
X1901
DIMMER
KEY DATA
LCD DATA
KEY MATRIX
LCD

3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



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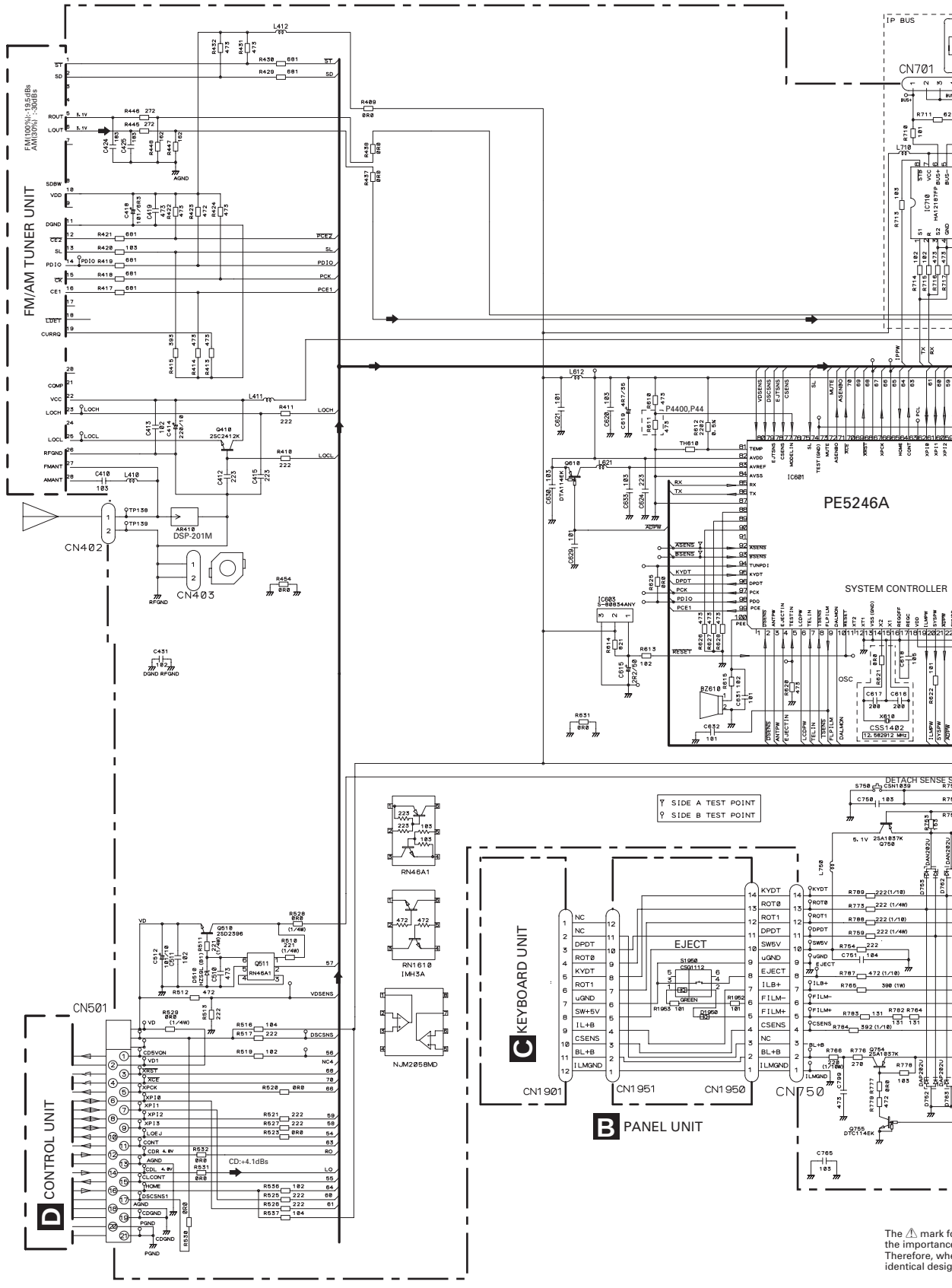

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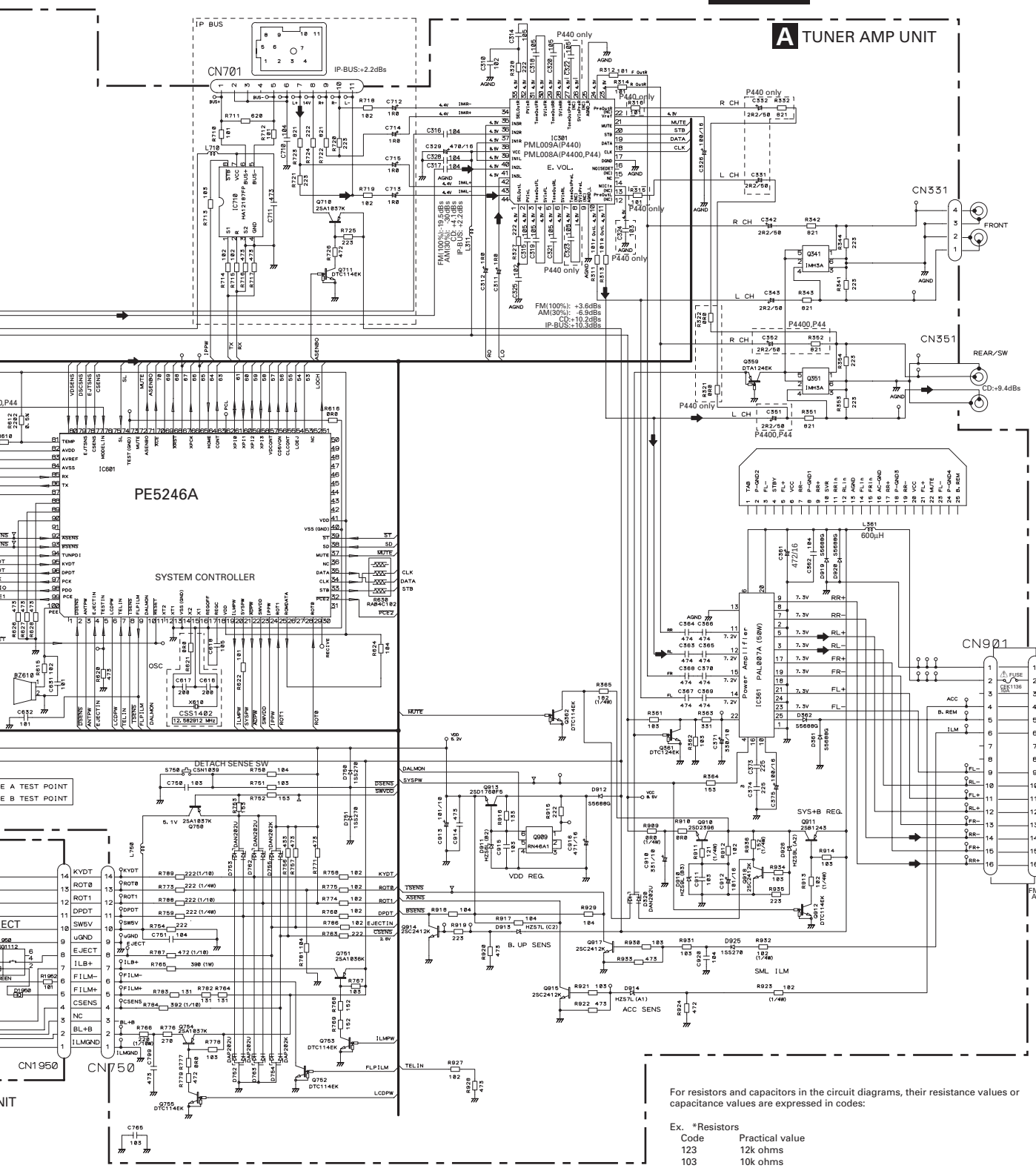


For resistors and capacitors in the circuit diagrams, their resistance values or capacitance values are expressed in codes:

Ex. *Resistors

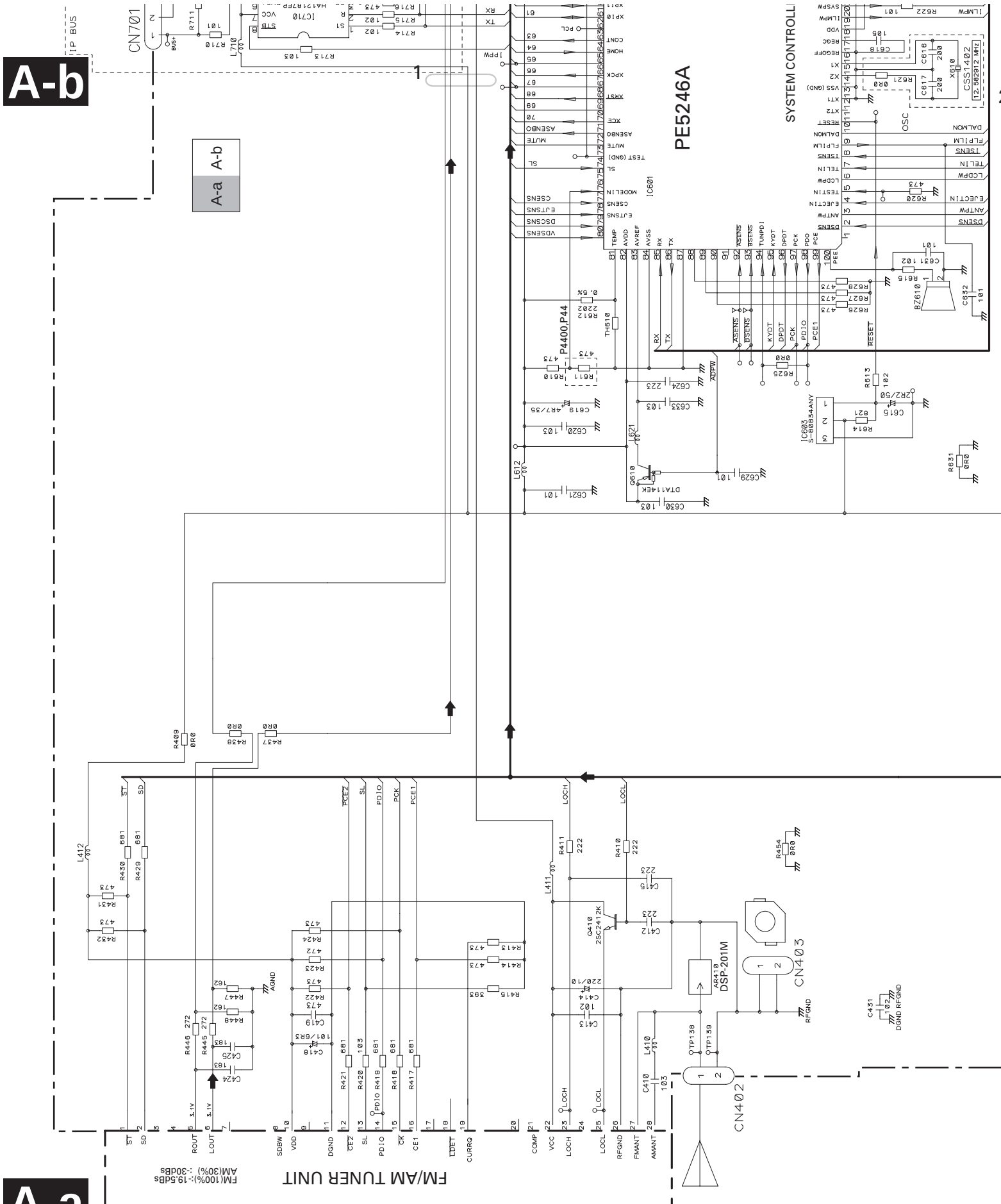
Code	Practical value
123	12k ohms
103	10k ohms

*Capacitors

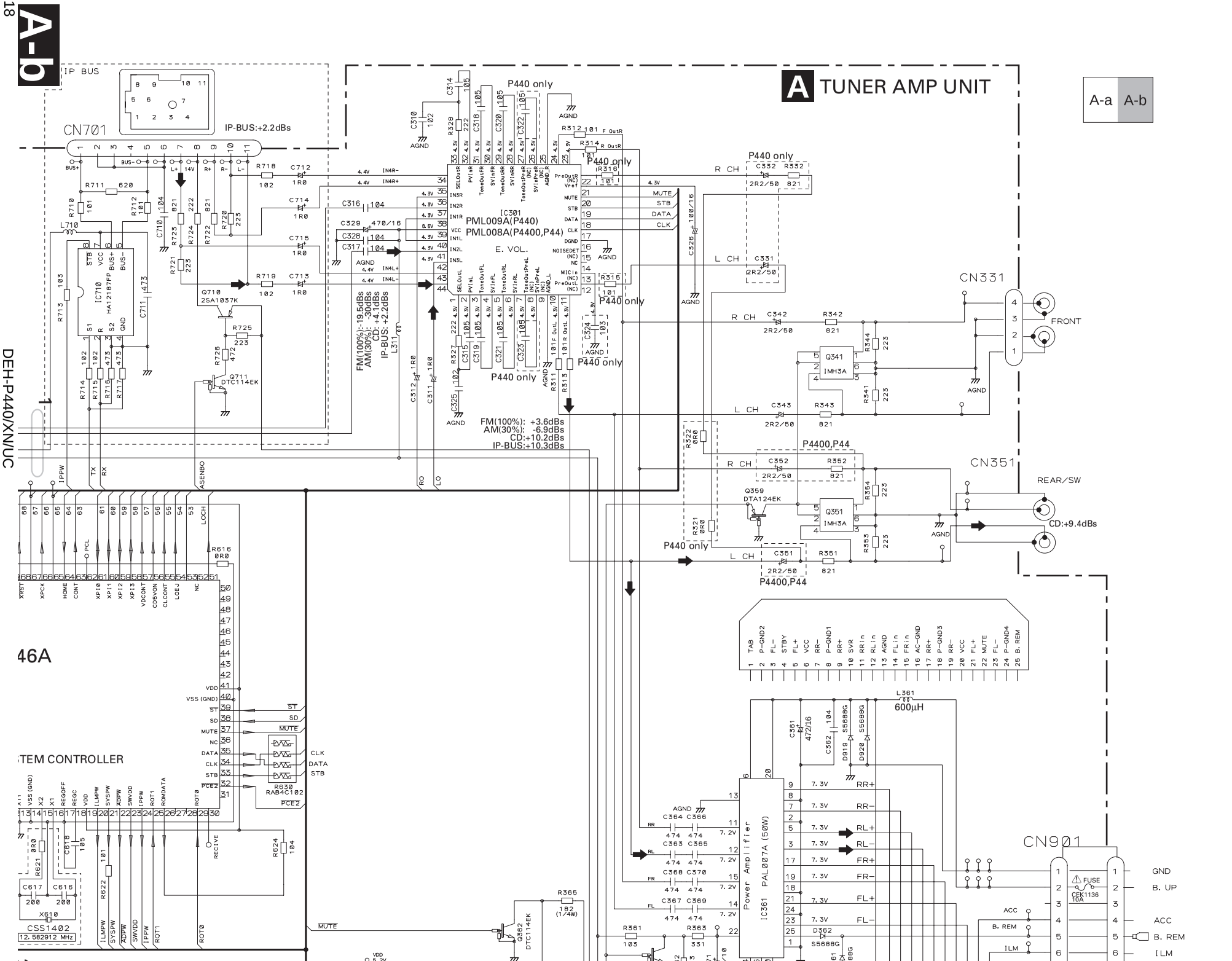
Code	Practical value
103	0.01uF
101/10	100uF/10V

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

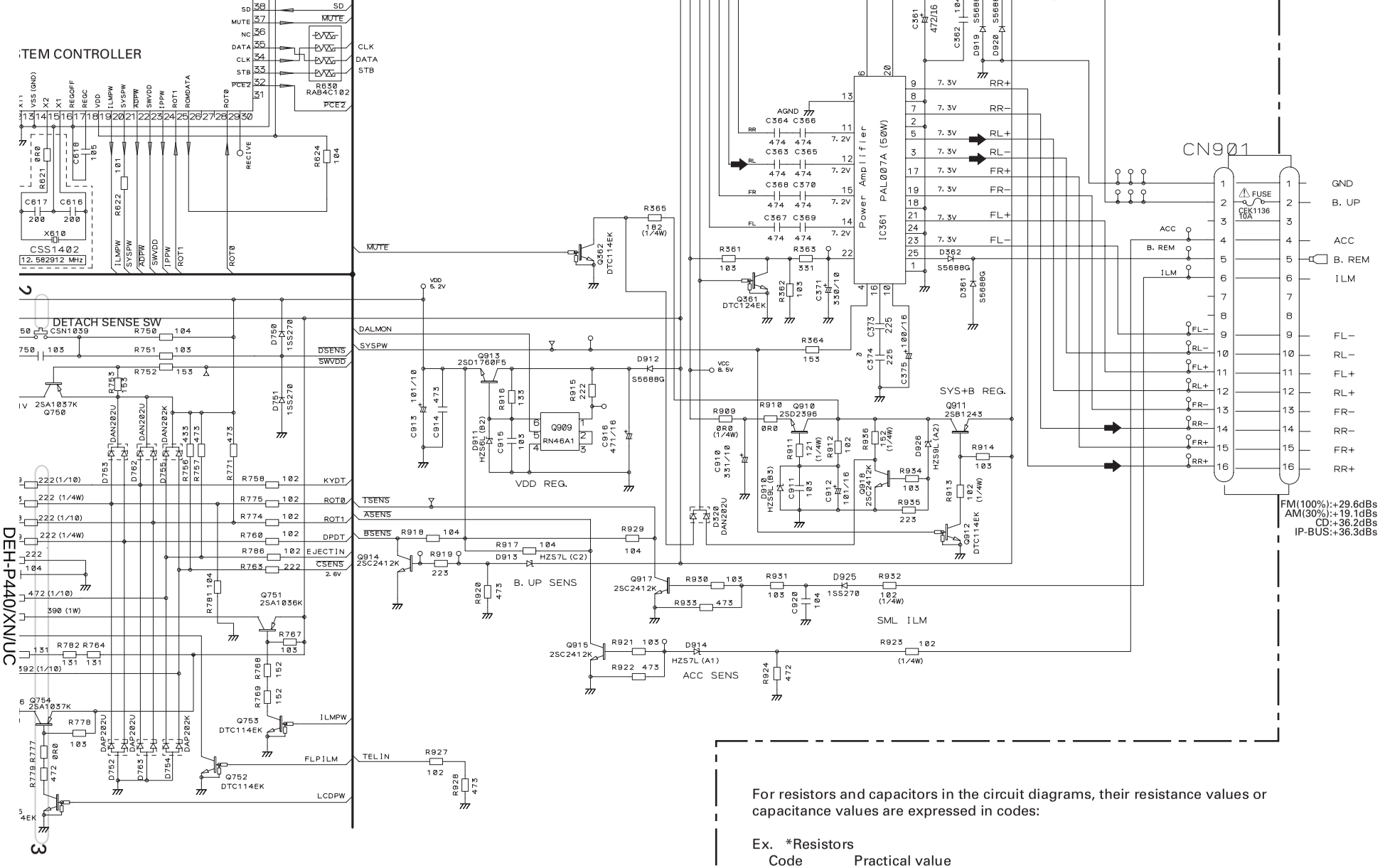
A


A-b
A-a
PE5246A
SYSTEM CONTROLL
P4400,P44
DSP-201M
FM/AM TUNER UNIT
FM(100%):-19.5dBs
AM(30%) :-30dBs
CN701
CN402
CN403
IP BUS
RESET
RESET
ASENS
BSENS
KYDT
DPDT
PCK
PDO
PCE1
RX
TX
ST
SD
ROUT
LOUT
SDBW
VDD
DGND
CE2
SL
PDIO
CK
CE1
LDET
CURRQ
COMP
VCC
LOCH
LOCL
RFGND
FMANT
AMANT
DGND RFGND

A-b
A-a
A-b
B PANEL UNIT
C KEYBOARD UNIT
D CONTROL UNIT
B
A-a
SYSTEM CONTROLL
DETACH SEN
EJECT
SIDE A TEST POINT
SIDE B TEST POINT
CN1750
CN1950
CN1951
CN1901
CN501
CN403
CD:+4.1dBs



DEH-P440/XN/UC



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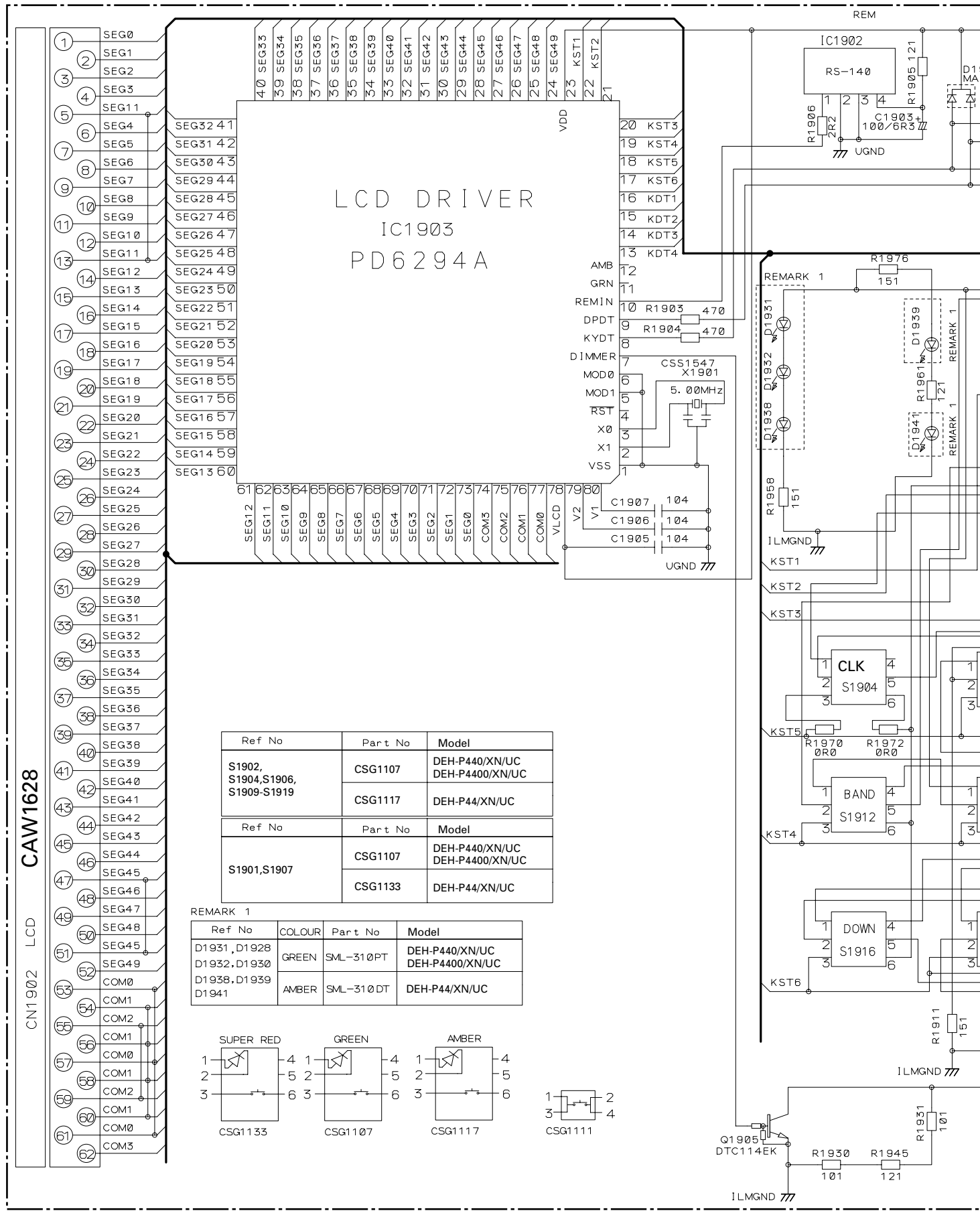
Code	Practical value
103	0.01uF
101/10	100uF/10V

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

A-a A-b

3.3 KEYBOARD UNIT



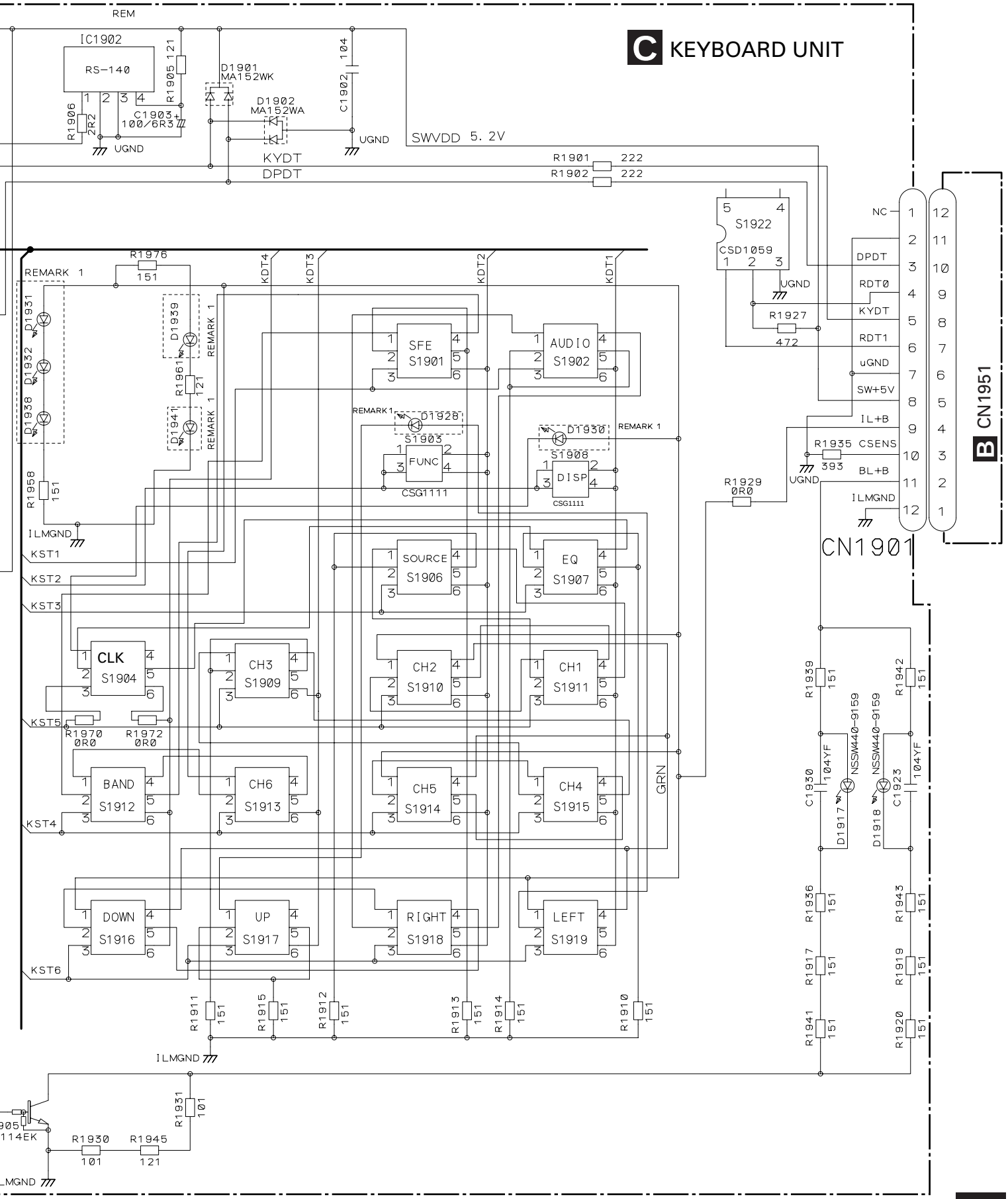
Ref No	Part No	Model
S1902, S1904,S1906, S1909-S1919	CSG1107	DEH-P440/XN/UC DEH-P4400/XN/UC
	CSG1117	DEH-P44/XN/UC

Ref No	Part No	Model
S1901,S1907	CSG1107	DEH-P440/XN/UC DEH-P4400/XN/UC
	CSG1133	DEH-P44/XN/UC

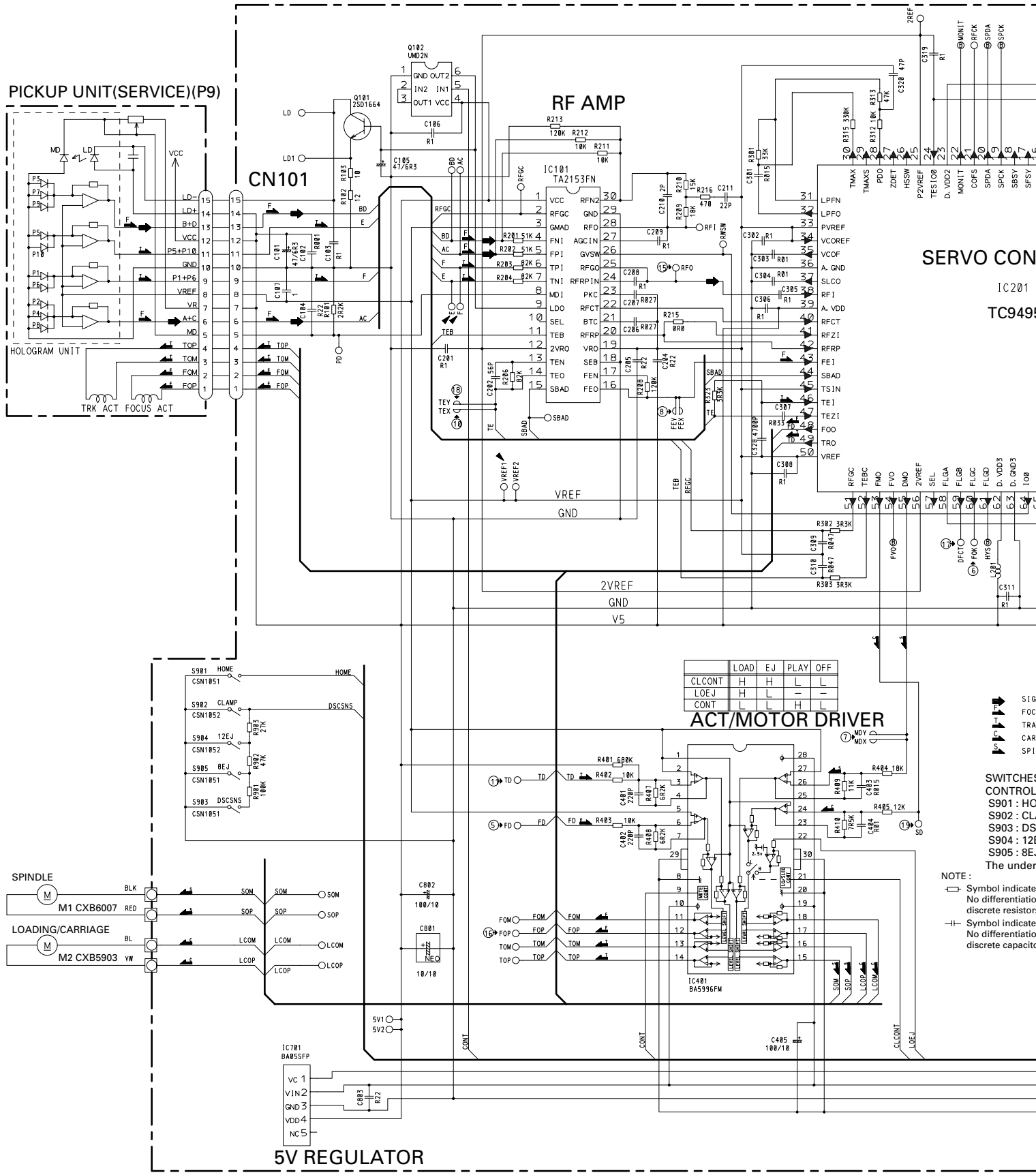
REMARK 1

Ref No	COLOUR	Part No	Model
D1931,D1928 D1932,D1930	GREEN	SML-310PT	DEH-P440/XN/UC DEH-P4400/XN/UC
D1938,D1939 D1941	AMBER	SML-310DT	DEH-P44/XN/UC

C KEYBOARD UNIT

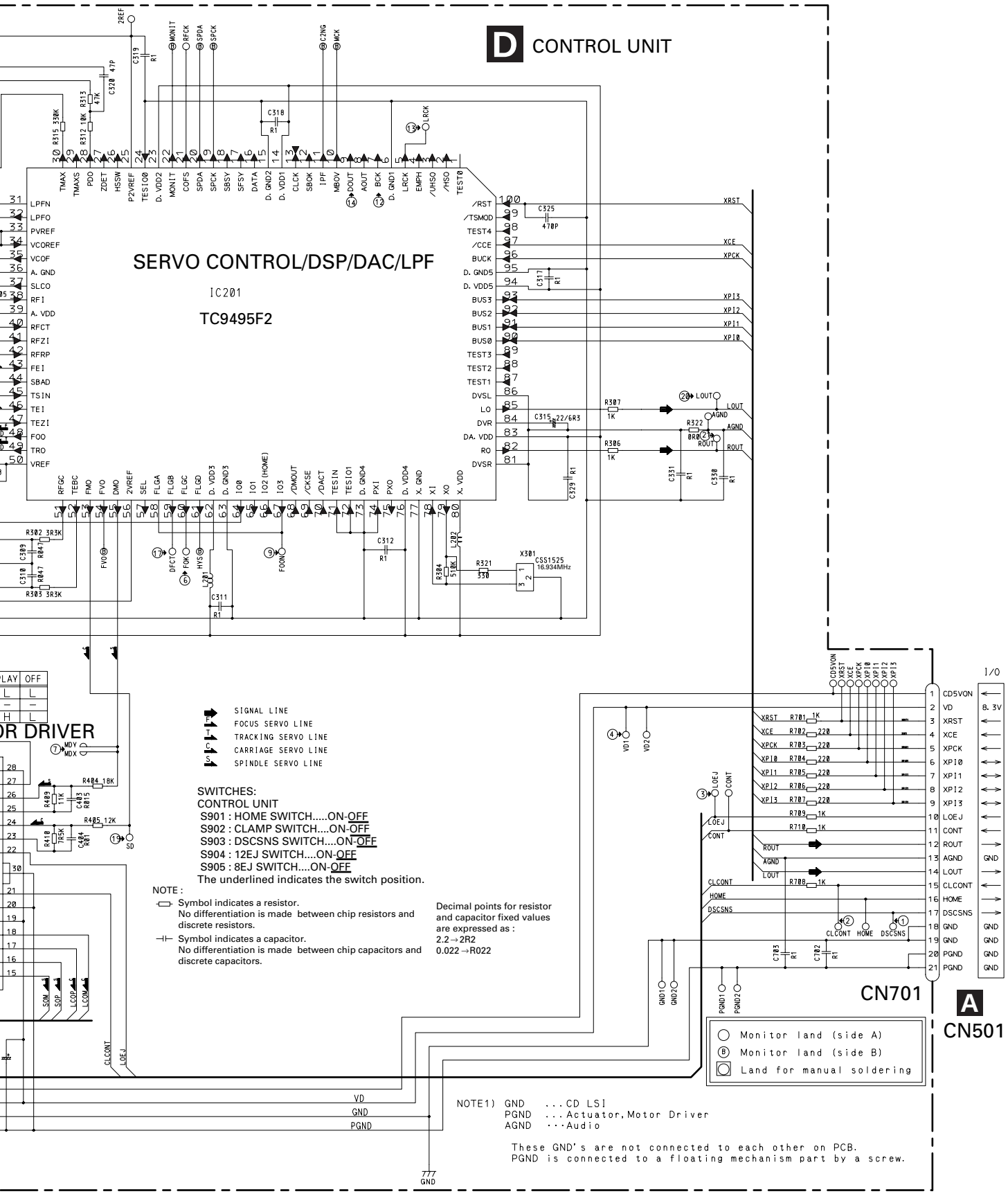


3.4 CD MECHANISM MODULE



	LOAD	EJ	PLAY	OFF
CLCONT	H	H	L	L
LOEJ	H	L	–	–
CONT	L	L	H	L

D CONTROL UNIT

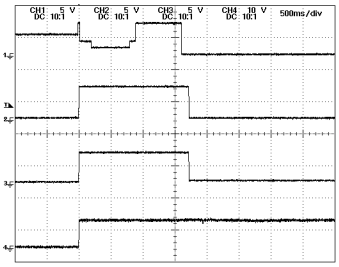

SERVO CONTROL/DSP/DAC/LPF
IC201
TC9495F2
SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
SWITCHES:
CONTROL UNIT
S901 : HOME SWITCH.....ON-OFF
S902 : CLAMP SWITCH....ON-OFF
S903 : DSCSNS SWITCH....ON-OFF
S904 : 12EJ SWITCH....ON-OFF
S905 : 8EJ SWITCH....ON-OFF
The underlined indicates the switch position.
NOTE :
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022
CN701
CN501
Monitor land (side A)
Monitor land (side B)
Land for manual soldering
NOTE1) GND ...CD LSI
PGND ...Actuator, Motor Driver
AGND ···Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating mechanism part by a screw.

Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
VREF:2.1V

● Waveforms

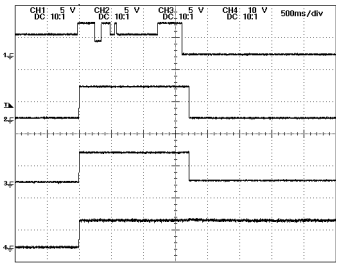
① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div.
③ CH3:LOEJ 5V/div. 500ms/div.
④ CH4:VD 10V/div.
When loading (12 cm CD)

Ref. : GND
Mode : Normal



① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div.
③ CH3:LOEJ 5V/div. 500ms/div.
④ CH4:VD 10V/div.
When loading (8 cm CD)

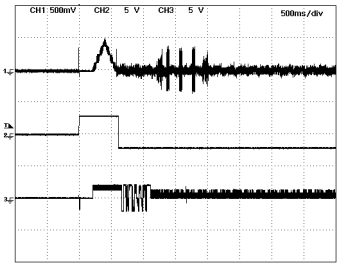
Ref. : GND
Mode : Normal



⑤ CH1:FD 500mV/div.
⑥ CH2:FOK 5V/div. 500ms/div.
⑦ CH3:MD 5V/div.

When setting up "Source On"

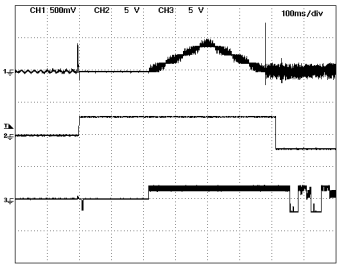
Ref. : VREF
Mode : Normal



⑤ CH1:FD 500mV/div.
⑥ CH2:FOK 5V/div. 100ms/div.
⑦ CH3:MD 5V/div.

Magnified drawing for "time"

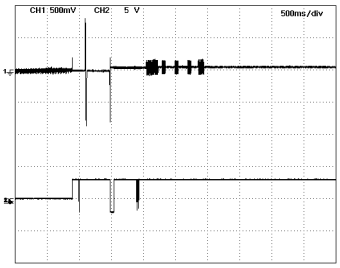
Ref. : VREF
Mode : Normal



⑧ CH1:FE 500mV/div.
⑨ CH2:FOON 5V/div. 500ms/div.

When setting up "Source On"

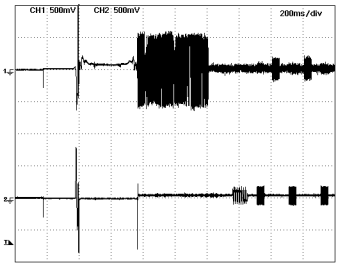
Ref. : VREF
Mode : Normal



⑩ CH1:TE 500mV/div.
⑧ CH2:FE 500mV/div. 200ms/div.

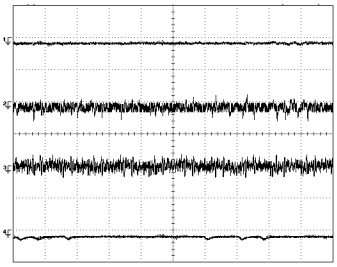
When setting up "Source On"

Ref. : VREF
Mode : Normal



⑧ CH1:FE 500mV/div.
⑤ CH2:FD 500mV/div.
⑩ CH3:TE 500mV/div. 1ms/div.
⑪ CH4:TD 500mV/div.
During "Play"

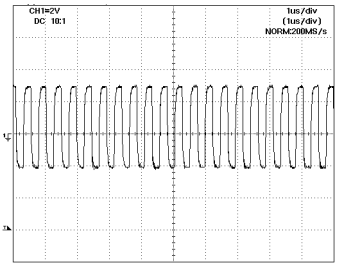
Ref. : VREF
Mode : Normal



⑫ CH1:BCK 2V/div. 1µs/div.

During "Play"

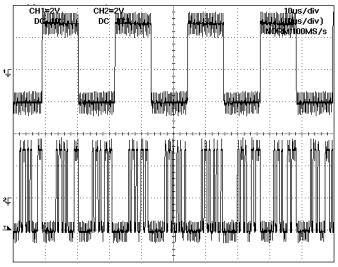
Ref. : VREF
Mode : Normal



⑬ CH1:LRCK 2V/div.
⑭ CH2:DOUT 2V/div. 10µs/div.

During "Play"

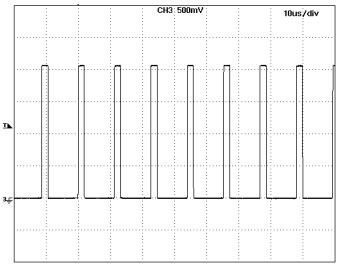
Ref. : VREF
Mode : Normal



⑦ CH1:MD 500mV/div. 10µs/div.

During "Play"

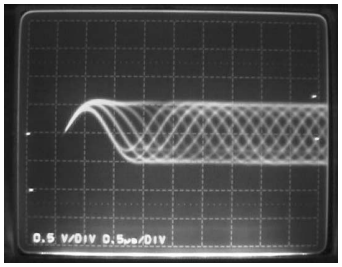
Ref. : VREF
Mode : Normal



⑮ CH1:RFO 500mV/div. 0.5µs/div.

During "Play"

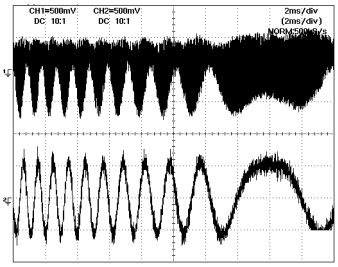
Ref. : VREF
Mode : Normal



⑮ CH1:RFO 500mV/div.
⑩ CH2:TE 500mV/div. 2ms/div.

During "Tracking Open"

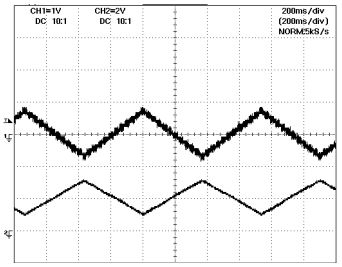
Ref. : VREF
Mode : Test



⑤ CH1:FD 1V/div.
⑯ CH2:FOP 2V/div. 200ms/div.

With no disk inserted
During "Focus Close"

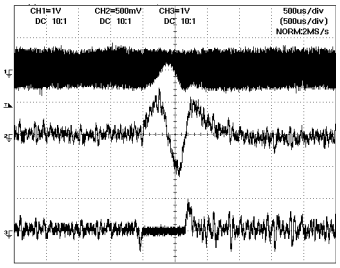
Ref. : VREF
Mode : Test



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 500mV/div. 500µs/div.
⑪ CH3:TD 1V/div.

1 Track Jump

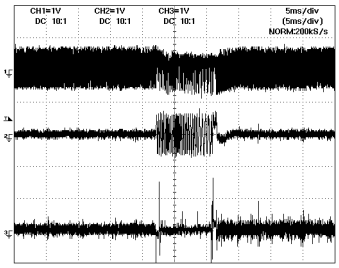
Ref. : VREF
Mode : Test



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 1V/div. 5ms/div.
⑪ CH3:TD 1V/div.

32 Track Jump

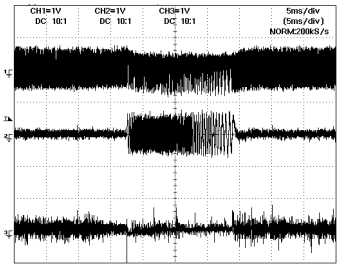
Ref. : VREF
Mode : Test



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 1V/div. 5ms/div.
⑪ CH3:TD 1V/div.

100 Track Jump

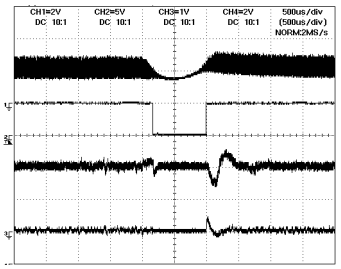
Ref. : VREF
Mode : Test



⑮ CH1:RFO 2V/div.
⑰ CH2:DFCT 5V/div. 500µs/div.
⑤ CH3:FD 1V/div.
⑪ CH4:TD 2V/div.

When reproducing black dots (800µm)

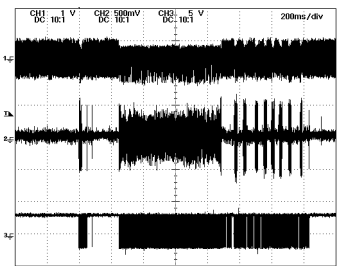
Ref. : VREF
Mode : Normal



⑮ CH1:RFO 1V/div.
⑩ CH2:TE 500mV/div. 200ms/div.
⑰ CH3:DFCT 5V/div.

During inside/outside search

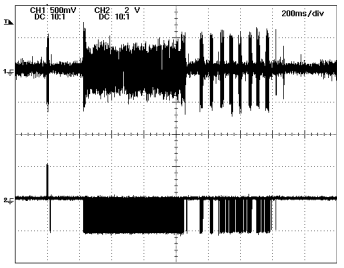
Ref. : VREF
Mode : Normal



⑱ CH1:TEY 500mV/div. 200ms/div.
⑲ CH2:SD 2V/div.

During inside/outside search

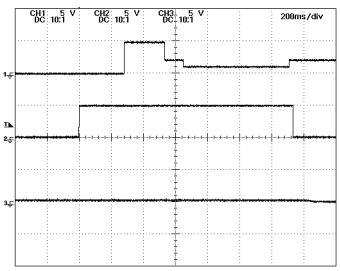
Ref. : VREF
Mode : Normal



① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div. 200ms/div.
③ CH3:LOEJ 5V/div.

When "Eject" (12 cm CD)

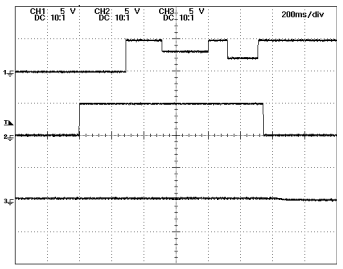
Ref. : GND
Mode : Normal



① CH1:DSCSNS 5V/div.
② CH2:CLCONT 5V/div. 200ms/div.
③ CH3:LOEJ 5V/div.

When "Eject" (8cm CD)

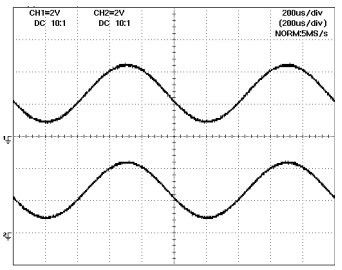
Ref. : GND
Mode : Normal



⑳ CH1:LOUT 2V/div. 200µs/div.
㉑ CH2:ROUT 2V/div.

"Play" in 1kHz, 0dB

Ref. : GND
Mode : Normal



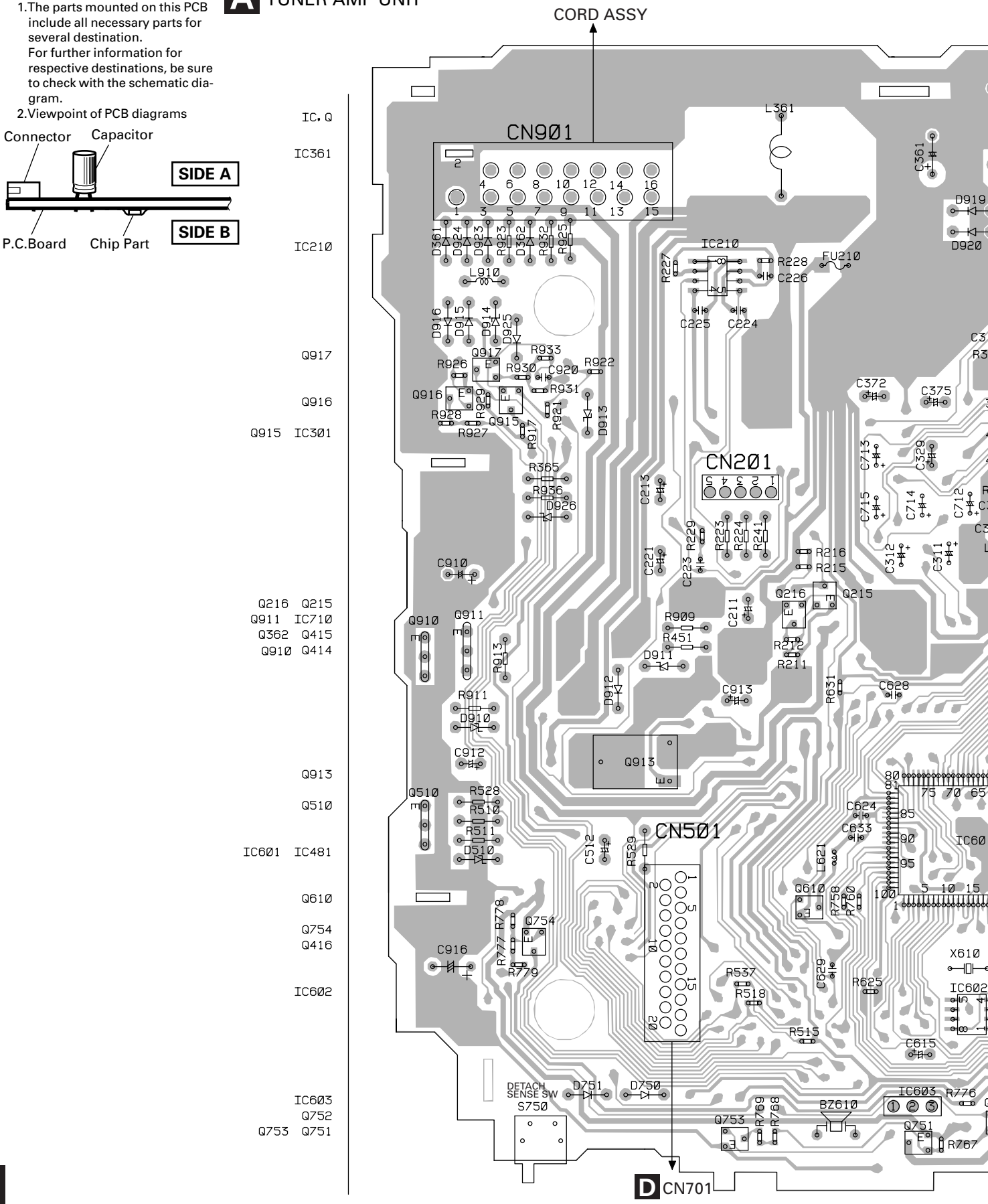
4. PCB CONNECTION DIAGRAM

4.1 TUNER AMP UNIT

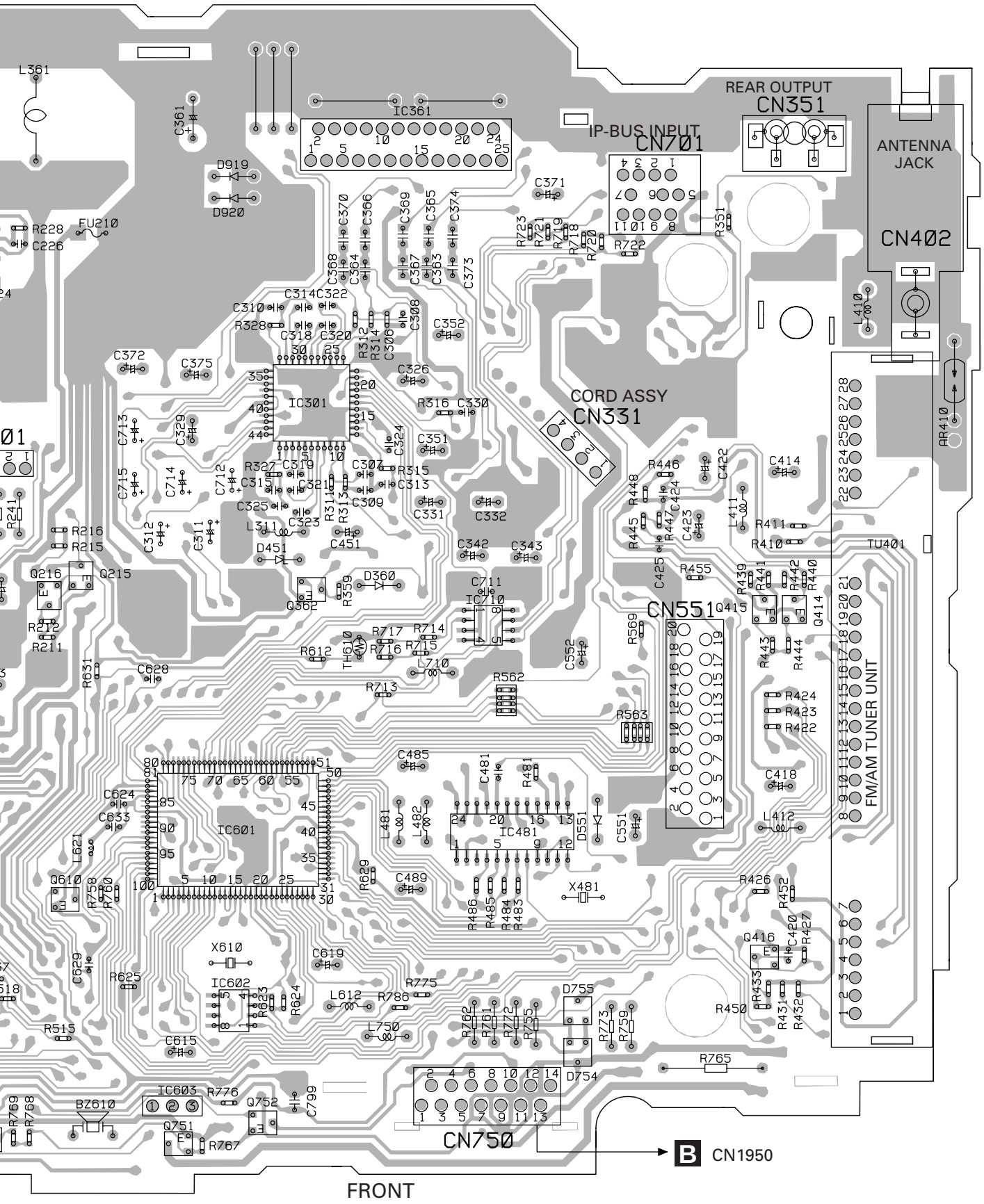
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams

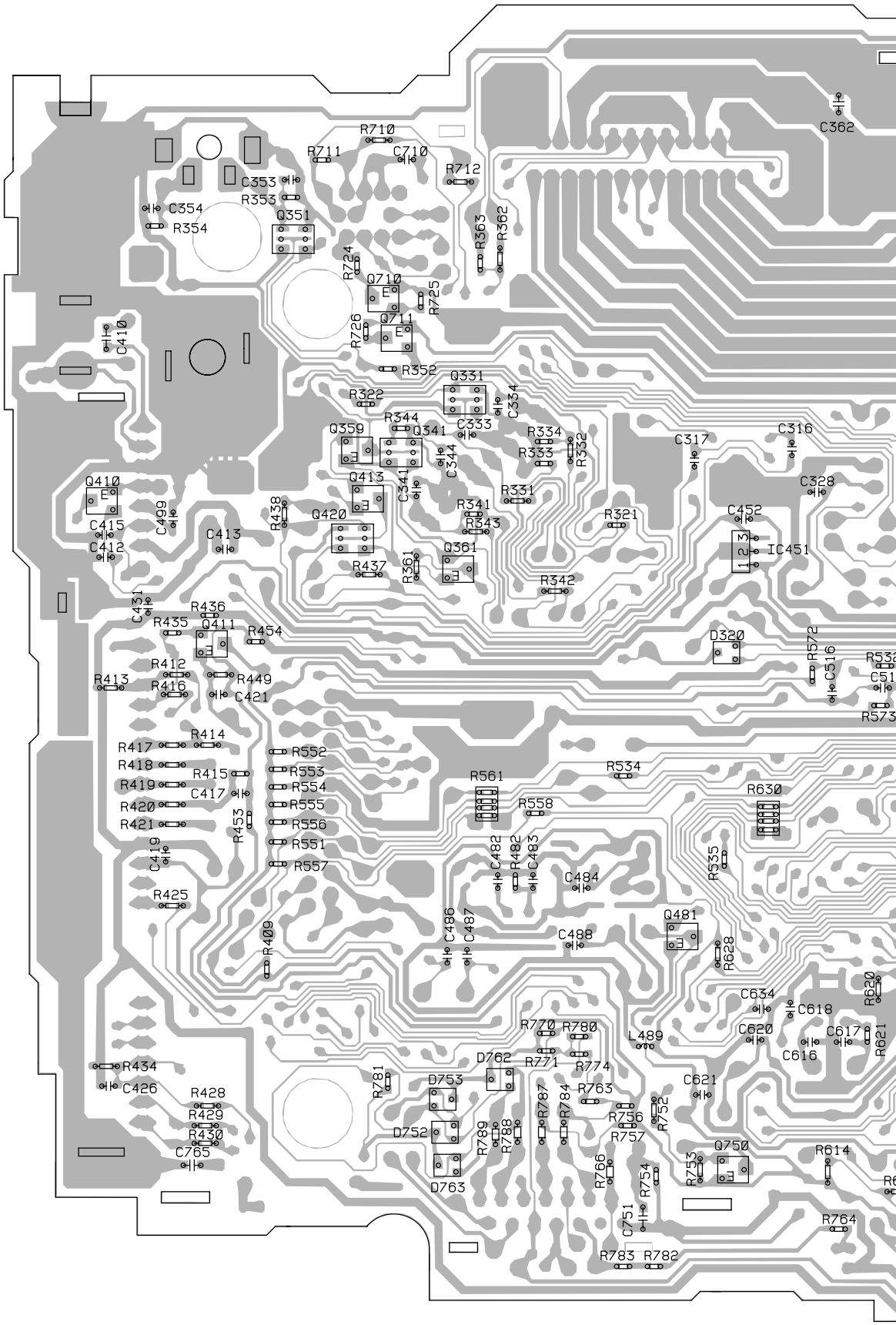
A TUNER AMP UNIT



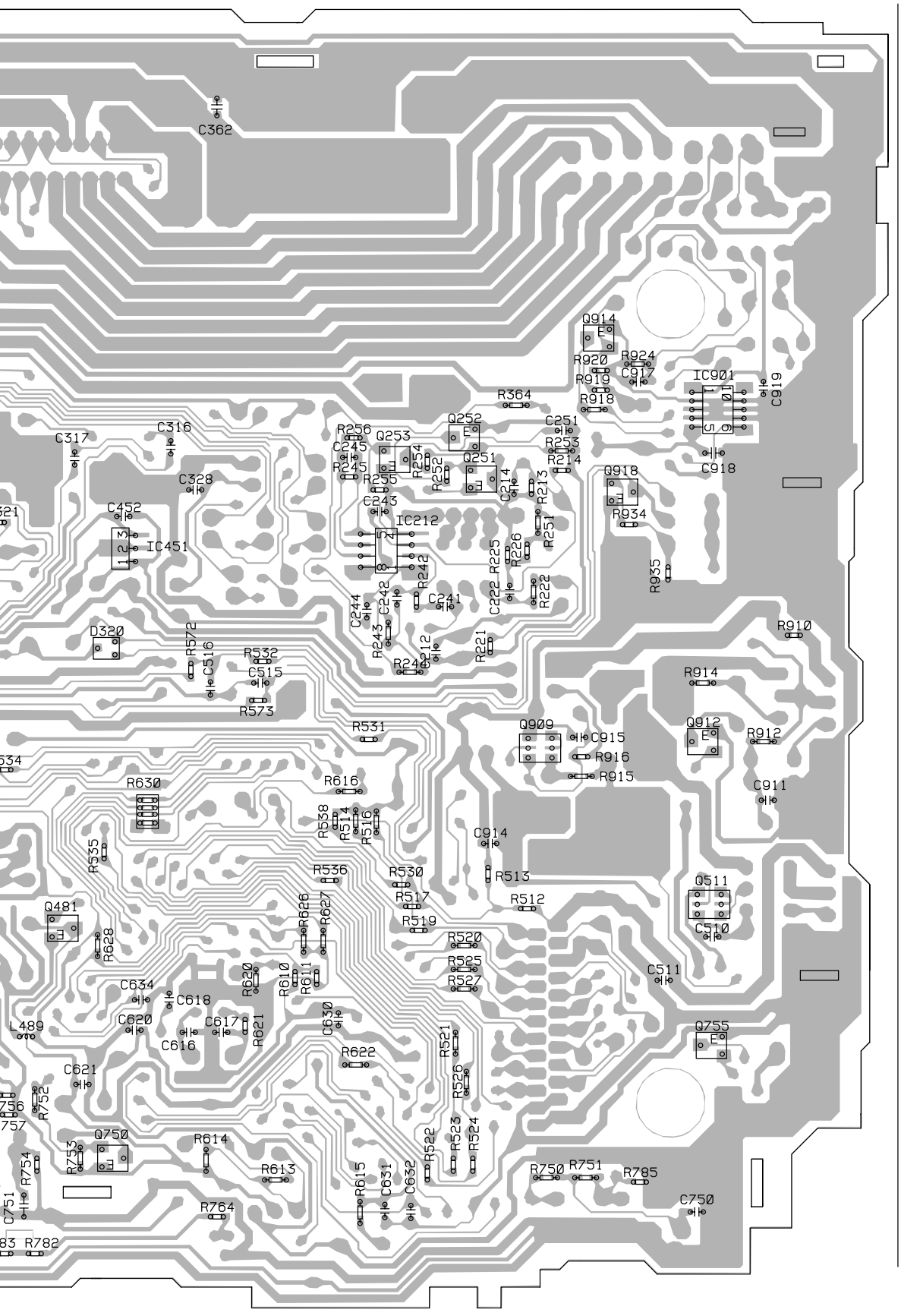
SIDE A


REAR OUTPUT
CN351
IP-BUS INPUT
CN701
ANTENNA JACK
CN402
CORD ASSY
CN331
CN551
FM/AM TUNER UNIT
TU401
CN750
B CN1950
FRONT
IC361
IC301
IC601
IC602
IC603
IC481
IC710
L361
FU210
D919
D920
D451
D360
D754
D755
X610
X481
BZ610
Q751
Q752
AR410

A TUNER AMP UNIT



SIDE B



IC, Q

A

Q351

Q710

Q711 Q914

Q331 IC901

B

Q252
Q359 Q341
Q253
Q251 Q918
Q410 Q413

Q420 IC212

Q361 IC451

Q411

Q909 Q912

C

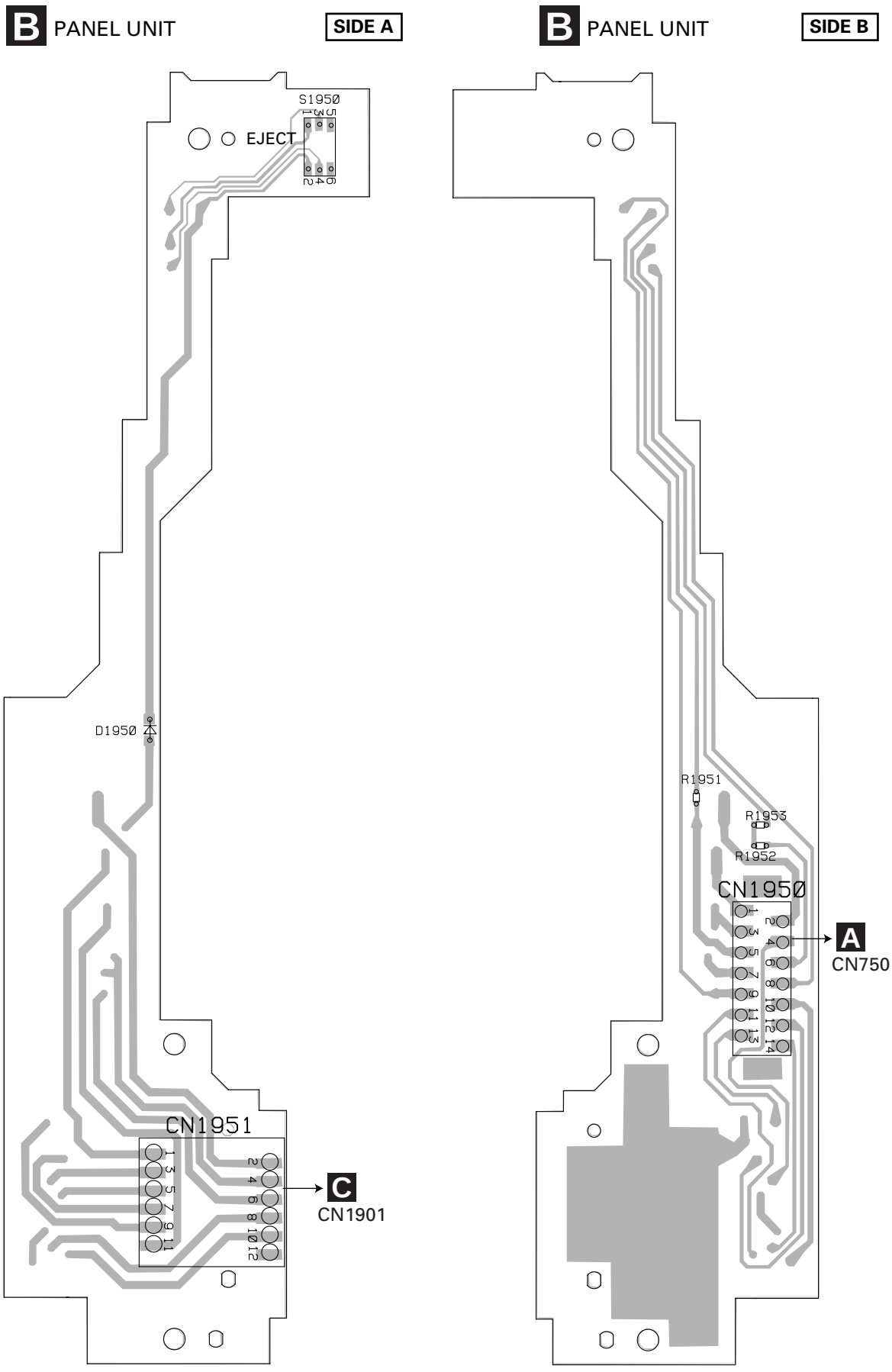
Q511
Q481

Q755

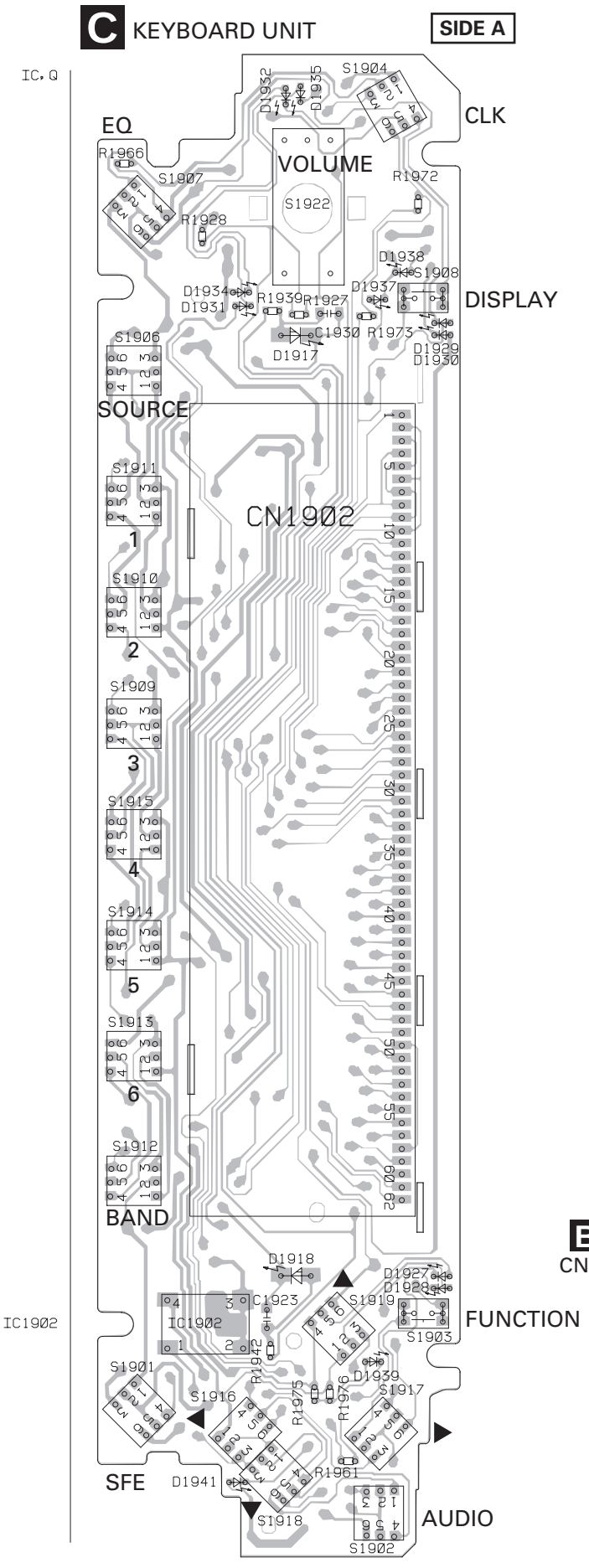
Q750

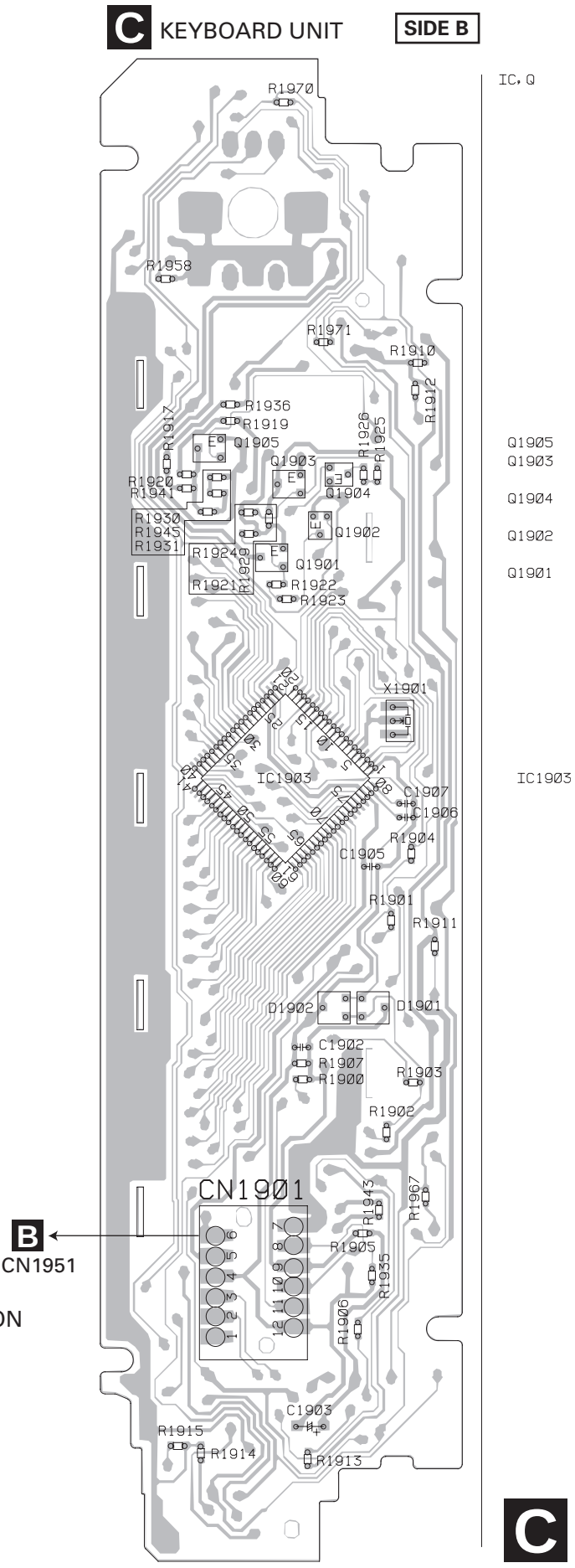
D

4.2 PANEL UNIT

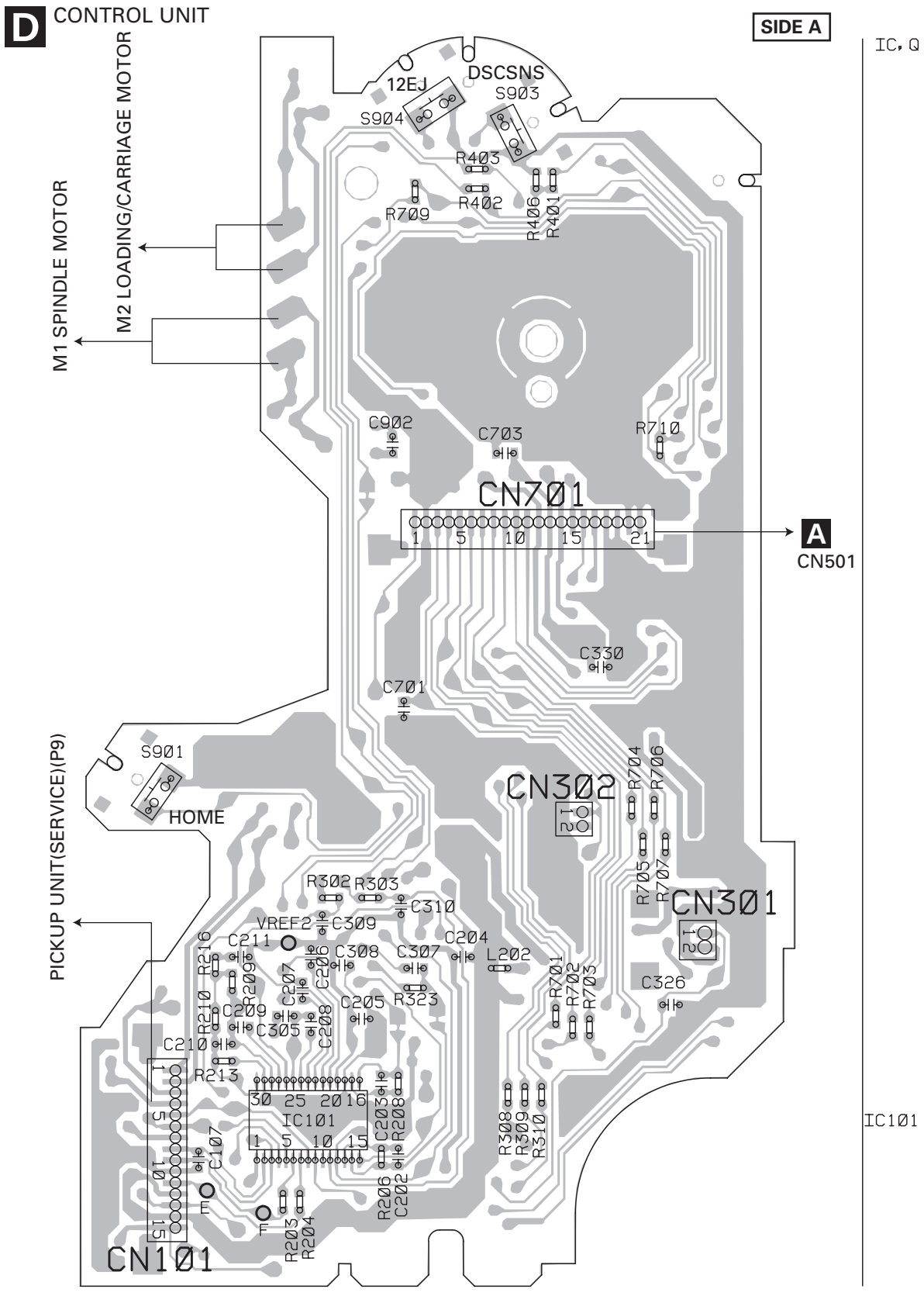


4.3 KEYBOARD UNIT



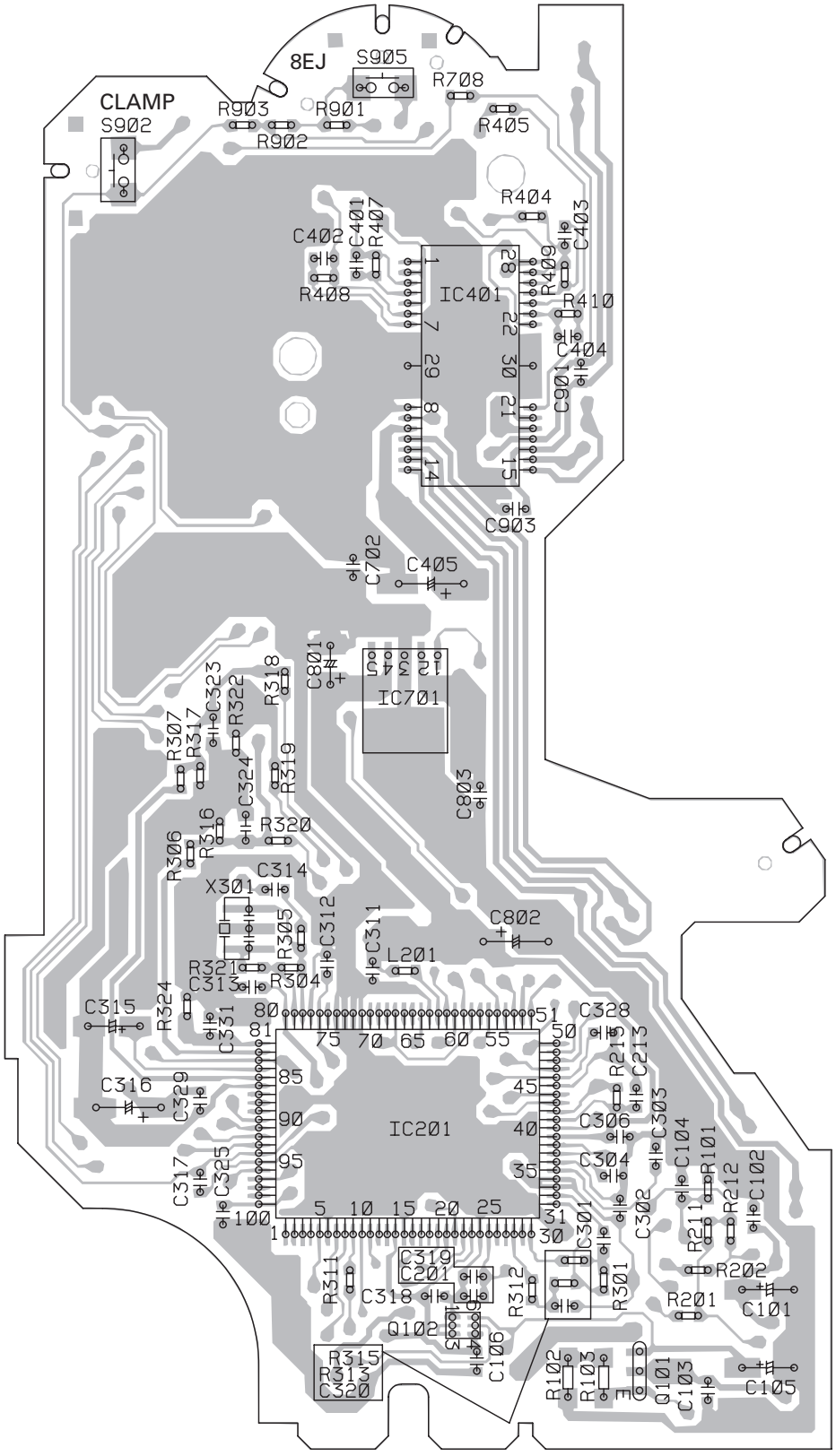


4.4 CD MECHANISM MODULE



D CONTROL UNIT

SIDE B



5. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/◯S◯◯◯J,RS1/◯◯S◯◯◯J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A

Unit Number:CWM8015(DEH-P440)

:CWM8014(DEH-P4400,P44)

Unit Name:Tuner Amp Unit

MISCELLANEOUS

Circuit Symboland No.	Part Name	Parts No.
IC 301	IC(DEH-P440)	PML009A
IC 301	IC(DEH-P4400,P44)	PML008A
IC 361	IC	PAL007A
IC 601	IC	PE5246A
IC 603	IC	S-80834ANY
IC 710	IC	HA12187FP
Q 341	Transistor	IMH3A
Q 351	Transistor	IMH3A
Q 359	Transistor	DTA124EK
Q 361	Transistor	DTC124EK
Q 362	Transistor	DTC114EK
Q 410	Transistor	2SC2412K
Q 510	Transistor	2SD2396
Q 511	Transistor	RN46A1
Q 610	Transistor	DTA114EK
Q 710	Transistor	2SA1037K
Q 711	Transistor	DTC114EK
Q 750	Transistor	2SA1037K
Q 751	Transistor	2SA1036K
Q 752	Transistor	DTC114EK
Q 753	Transistor	DTC114EK
Q 754	Transistor	2SA1037K
Q 755	Transistor	DTC114EK
Q 909	Transistor	RN46A1
Q 910	Transistor	2SD2396
Q 911	Transistor	2SB1243
Q 912	Transistor	DTC114EK
Q 913	Transistor	2SD1760F5
Q 914	Transistor	2SC2412K
Q 915	Transistor	2SC2412K
Q 917	Transistor	2SC2412K
Q 918	Transistor	2SC2412K
D 320	Diode	DAN202U
D 361	Diode	S5688G
D 362	Diode	S5688G
D 510	Diode	HZS9L(B1)
D 750	Diode	1SS270
D 751	Diode	1SS270
D 752	Diode	DAP202U
D 753	Diode	DAN202U
D 754	Diode	DAP202K
D 755	Diode	DAN202K
D 762	Diode	DAN202U
D 763	Diode	DAP202U
D 910	Diode	HZS9L(B3)
D 911	Diode	HZS6L(B2)
D 912	Diode	S5688G
D 913	Diode	HZS7L(C2)
D 914	Diode	HZS7L(A1)
D 919	Diode	S5688G
D 920	Diode	S5688G
D 925	Diode	1SS270
D 926	Diode	HZS9L(A2)
L 311	Ferri-Inductor	LAU4R7K
L 361	Choke Coil 600µH	CTH1221
L 410	Ferri-Inductor	LAU4R7K
L 411	Ferri-Inductor	LAU2R2K
L 412	Ferri-Inductor	LAU2R2K
L 612	Inductor	LAU100K
L 621	Inductor	CTF1346
L 710	Ferri-Inductor	LAU2R2K
L 750	Ferri-Inductor	LAU2R2K
TH 610	Thermistor	CCX1037
X 610	Radiator 12.58291MHz	CSS1402
S 750	Switch(DETACH SENSE)	CSN1039
	FM/AM Tuner Unit	CWE1563
BZ 610	Buzzer	CPV1050
AR 410	Arrester	DSP-201M

RESISTORS

Circuit Symboland No.	Part Name	Parts No.
R 311		RS1/16S101J
R 312		RS1/16S101J
R 313		RS1/16S101J
R 314		RS1/16S101J
R 315	(DEH-P440)	RS1/16S101J
R 316	(DEH-P440)	RS1/16S101J
R 321	(DEH-P440)	RS1/16S0R0J
R 322	(DEH-P440)	RS1/16S0R0J
R 327		RS1/16S222J
R 328		RS1/16S222J

Circuit Symboland No.	Part Name	Parts No.
R 332	(DEH-P440)	RS1/16S821J
R 341		RS1/16S223J
R 342		RS1/16S821J
R 343		RS1/16S821J
R 344		RS1/16S223J
R 351		RS1/16S821J
R 352	(DEH-P4400,P44)	RS1/16S821J
R 353		RS1/16S223J
R 354		RS1/16S223J
R 361		RS1/16S103J
R 362		RS1/16S103J
R 363		RS1/16S331J
R 364		RS1/16S153J
R 365		RD1/4PU182J
R 409		RS1/16S0R0J
R 410		RS1/16S222J
R 411		RS1/16S222J
R 413		RS1/16S473J
R 414		RS1/16S473J
R 415		RS1/16S393J
R 417		RS1/16S681J
R 418		RS1/16S681J
R 419		RS1/16S681J
R 420		RS1/16S103J
R 421		RS1/16S681J
R 422		RS1/16S473J
R 423		RS1/16S472J
R 424		RS1/16S473J
R 429		RS1/16S681J
R 430		RS1/16S681J
R 431		RS1/16S473J
R 432		RS1/16S473J
R 437		RS1/16S0R0J
R 438		RS1/16S0R0J
R 445		RS1/16S272J
R 446		RS1/16S272J
R 447		RS1/16S162J
R 448		RS1/16S162J
R 454		RS1/16S0R0J
R 510		RD1/4PU221J
R 511		RD1/4PU221J
R 512		RS1/16S472J
R 513		RS1/16S222J
R 516		RS1/16S104J
R 517		RS1/16S222J
R 519		RS1/16S102J
R 520		RS1/16S0R0J
R 521		RS1/16S222J
R 523		RS1/16S0R0J
R 525		RS1/16S222J
R 526		RS1/16S222J
R 527		RS1/16S222J
R 528		RD1/4PU0R0J
R 529		RD1/4PU0R0J
R 530		RS1/16S0R0J
R 531		RS1/16S0R0J
R 532		RS1/16S0R0J
R 536		RS1/16S102J
R 537		RS1/16S104J
R 610		RS1/16S473J

Circuit Symboland No.	Part Name	Parts No.
R 611	(DEH-P4400,P44)	RS1/16S473J
R 612		RS1/16S2202F
R 613		RS1/16S102J
R 614		RS1/16S821J
R 615		RS1/16S102J
R 616		RS1/16S0R0J
R 620		RS1/16S473J
R 621		RS1/16S0R0J
R 622		RS1/16S101J
R 624		RS1/16S104J
R 625		RS1/16S0R0J
R 626		RS1/16S473J
R 627		RS1/16S473J
R 628		RS1/16S473J
R 630		RAB4C102J
R 631		RS1/16S0R0J
R 710		RS1/16S101J
R 711		RS1/16S620J
R 712		RS1/16S101J
R 713		RS1/16S103J
R 714		RS1/16S102J
R 715		RS1/16S102J
R 716		RS1/16S473J
R 717		RS1/16S473J
R 718		RS1/16S102J
R 719		RS1/16S102J
R 720		RS1/16S223J
R 721		RS1/16S223J
R 722		RS1/16S821J
R 723		RS1/16S821J
R 724		RS1/16S222J
R 725		RS1/16S223J
R 726		RS1/16S472J
R 750		RS1/16S104J
R 751		RS1/16S103J
R 752		RS1/16S153J
R 753		RS1/16S153J
R 754		RS1/16S222J
R 756		RS1/16S433J
R 757		RS1/16S473J
R 758		RS1/16S102J
R 759		RD1/4PU222J
R 760		RS1/16S102J
R 763		RS1/16S222J
R 764		RS1/16S131J
R 765		RS1PMF390J
R 766		RS1/10S270J
R 767		RS1/16S103J
R 768		RS1/16S152J
R 769		RS1/16S152J
R 771		RS1/16S473J
R 773		RD1/4PU222J
R 774		RS1/16S102J
R 775		RS1/16S102J
R 776		RS1/16S220J
R 777		RS1/16S0R0J
R 778		RS1/16S103J
R 779		RS1/16S472J
R 781		RS1/16S104J
R 782		RS1/16S131J

Circuit Symboland No.	Part Name	Parts No.
R 783		RS1/16S131J
R 784		RS1/10S392J
R 786		RS1/16S102J
R 787		RS1/10S472J
R 788		RS1/10S222J
R 789		RS1/10S222J
R 909		RD1/4PU0R0J
R 910		RS1/16S0R0J
R 911		RD1/4PU121J
R 912		RS1/16S102J
R 913		RD1/4PU102J
R 914		RS1/16S103J
R 915		RS1/16S222J
R 916		RS1/16S133J
R 917		RS1/16S104J
R 918		RS1/16S104J
R 919		RS1/16S223J
R 920		RS1/16S473J
R 921		RS1/16S103J
R 922		RS1/16S473J
R 923		RD1/4PU102J
R 924		RS1/16S472J
R 927		RS1/16S102J
R 928		RS1/16S473J
R 929		RS1/16S104J
R 930		RS1/16S103J
R 931		RS1/16S103J
R 932		RD1/4PU102J
R 933		RS1/16S473J
R 934		RS1/16S103J
R 935		RS1/16S223J
R 936		RD1/4PU152J

CAPACITORS

Circuit Symboland No.	Part Name	Parts No.
C 310		CKSRYB102K50
C 311		CEJA1R0M50
C 312		CEJA1R0M50
C 314		CKSRYB105K6R3
C 315		CKSRYB105K6R3
C 316		CKSRYB104K16
C 317		CKSRYB104K16
C 318		CKSRYB105K6R3
C 319		CKSRYB105K6R3
C 320		CKSRYB105K6R3
C 321		CKSRYB105K6R3
C 322	(DEH-P440)	CKSRYB105K6R3
C 323	(DEH-P440)	CKSRYB105K6R3
C 324	(DEH-P440)	CKSRYB103K50
C 325		CKSRYB102K50
C 326		CEJA100M16
C 328		CKSRYB104K16
C 329		CEJA470M10
C 331	(DEH-P440)	CEJA2R2M50
C 332	(DEH-P440)	CEJA2R2M50
C 342		CEJA2R2M50
C 343		CEJA2R2M50
C 351	(DEH-P4400,P44)	CEJA2R2M50
C 352	(DEH-P4400,P44)	CEJA2R2M50
C 361	4700µF/16V	CCH1367
C 362		CKSQYB104K16
C 363		CKSQYB474K16
C 364		CKSQYB474K16
C 365		CKSQYB474K16
C 366		CKSQYB474K16
C 367		CKSQYB474K16
C 368		CKSQYB474K16
C 369		CKSQYB474K16
C 370		CKSQYB474K16
C 371		CEJA330M10
C 373		CKSQYB225K10
C 374		CKSQYB225K10
C 375		CEJA100M16
C 410		CKSQYB103K50
C 412		CKSRYB223K25
C 413		CKSRYB102K50
C 414		CEJA220M10
C 415		CKSRYB223K25
C 418		CEAL101M10
C 419		CKSRYB473K16
C 424		CKSRYB183K25
C 425		CKSRYB183K25
C 431		CKSRYB102K50
C 510		CKSRYB473K16
C 511		CKSRYB102K50
C 512		CEJA101M16
C 615		CEAL2R2M50
C 616		CCSRCH200J50
C 617		CCSRCH200J50
C 618		CKSRYB105K6R3
C 619		CEAL4R7M35
C 620		CKSRYB103K50
C 621		CCSRCH101J50
C 624		CKSRYB223K25
C 629		CCSRCH101J50
C 630		CKSRYB103K50
C 631		CCSRCH101J50
C 632		CCSRCH101J50
C 633		CKSRYB103K50
C 634		CKSRYB472K50
C 710		CKSRYB104K16
C 711		CKSRYB473K16
C 712		CEJA1R0M50
C 713		CEJA1R0M50
C 714		CEJA1R0M50
C 715		CEJA1R0M50
C 750		CKSRYB103K25
C 751		CKSQYB104K16
C 765		CKSQYB103K50
C 799		CKSQYB473K16
C 910	330µF/16V	CCH1326
C 911		CKSRYB103K25
C 912		CEJA101M16
C 913		CEJA101M10
C 914		CKSRYB473K16
C 915		CKSRYB103K25
C 916	470µF/16V	CCH1331
C 920		CKSRYB104K16

C

Unit Number:CWM8308(DEH-P440,P4400)
:CWM8310(DEH-P44)

Unit Name:Keyboard Unit

MISCELLANEOUS

Circuit Symboland No.		Part Name	Parts No.
IC	1902	HIC	RS-140
IC	1903	IC	PD6294A
Q	1905	Transistor	DTC114EK
D	1901	Diode	MA152WK
D	1902	Diode	MA152WA
D	1917	LED	NSSW440-9159
D	1918	LED	NSSW440-9159
D	1928	LED(DEH-P440,P4400)	SML-310PT
D	1928	LED(DEH-P44)	SML-310DT
D	1930	LED(DEH-P440,P4400)	SML-310PT
D	1930	LED(DEH-P44)	SML-310DT
D	1931	LED(DEH-P440,P4400)	SML-310PT
D	1931	LED(DEH-P44)	SML-310DT
D	1932	LED(DEH-P440,P4400)	SML-310PT
D	1932	LED(DEH-P44)	SML-310DT
D	1938	LED(DEH-P440,P4400)	SML-310PT
D	1938	LED(DEH-P44)	SML-310DT
D	1939	LED(DEH-P440,P4400)	SML-310PT
D	1939	LED(DEH-P44)	SML-310DT
D	1941	LED(DEH-P440,P4400)	SML-310PT
D	1941	LED(DEH-P44)	SML-310DT
X	1901	Ceramic Resonator 5MHz	CSS1547
S	1901	Switch(DEH-P440,P4400)	CSG1107
S	1901	Switch(DEH-P44)	CSG1117
S	1902	Switch(DEH-P440,P4400)	CSG1107
S	1902	Switch(DEH-P44)	CSG1117
S	1903	Push Switch	CSG1111
S	1903	Switch(DEH-P44)	CSG1117
S	1904	Switch(DEH-P440,P4400)	CSG1107
S	1904	Switch(DEH-P44)	CSG1117
S	1906	Switch(DEH-P440,P4400)	CSG1107
S	1906	Switch(DEH-P44)	CSG1117
S	1907	Switch(DEH-P440,P4400)	CSG1107
S	1907	Switch(DEH-P44)	CSG1117
S	1908	Push Switch	CSG1111
S	1909	Switch(DEH-P440,P4400)	CSG1107
S	1909	Switch(DEH-P44)	CSG1117
S	1910	Switch(DEH-P440,P4400)	CSG1107
S	1910	Switch(DEH-P44)	CSG1117
S	1911	Switch(DEH-P440,P4400)	CSG1107
S	1911	Switch(DEH-P44)	CSG1117
S	1912	Switch(DEH-P440,P4400)	CSG1107
S	1912	Switch(DEH-P44)	CSG1117
S	1913	Switch(DEH-P440,P4400)	CSG1107
S	1913	Switch(DEH-P44)	CSG1117
S	1914	Switch(DEH-P440,P4400)	CSG1107
S	1914	Switch(DEH-P44)	CSG1117
S	1915	Switch(DEH-P440,P4400)	CSG1107
S	1915	Switch(DEH-P44)	CSG1117
S	1916	Switch(DEH-P440,P4400)	CSG1107
S	1916	Switch(DEH-P44)	CSG1117
S	1917	Switch(DEH-P440,P4400)	CSG1107
S	1917	Switch(DEH-P44)	CSG1117
S	1918	Switch(DEH-P440,P4400)	CSG1107
S	1918	Switch(DEH-P44)	CSG1117
S	1919	Switch(DEH-P440,P4400)	CSG1107
S	1919	Switch(DEH-P44)	CSG1117
S	1922	Encoder	CSD1059
		LCD	CAW1628

RESISTORS

R	1901		RS1/16S222J
R	1902		RS1/16S222J
R	1903		RS1/16S470J
R	1904		RS1/16S470J
R	1905		RS1/16S121J
R	1906		RS1/16S2R2J
R	1910		RS1/16S151J
R	1911		RS1/16S151J
R	1912		RS1/16S151J
R	1913		RS1/16S151J
R	1914		RS1/16S151J
R	1915		RS1/16S151J
R	1917		RS1/16S151J
R	1919		RS1/16S151J
R	1920		RS1/16S151J
R	1927		RS1/16S472J
R	1929		RS1/16S0R0J
R	1930		RS1/16S101J
R	1931		RS1/16S101J
R	1935		RS1/16S393J
R	1936		RS1/16S151J
R	1939		RS1/16S151J
R	1941		RS1/16S151J
R	1942		RS1/16S151J
R	1943		RS1/16S151J
R	1945		RS1/16S121J
R	1958		RS1/16S151J
R	1961		RS1/16S121J
R	1971		RS1/16S0R0J
R	1973		RS1/16S0R0J
R	1976		RS1/16S151J

CAPACITORS

C	1902		CKSRYB104K16
C	1903		CSZS100M6R3
C	1905		CKSRYB104K16
C	1906		CKSRYB104K16
C	1907		CKSRYB104K16
C	1923		CKSQYF104Z50
C	1930		CKSQYF104Z50

Circuit Symboland No.	Part Name	Parts No.

B

Unit Number:CWM7375

Unit Name:Panel Unit

D	1950	LED	CL220PGC
S	1950	Push Switch(EJECT)	CSG1112
R	1952		RS1/16S101J
R	1953		RS1/16S101J

D

Unit Number:CWX2481

Unit Name:Control Unit

MISCELLANEOUS

IC	101	IC	TA2153FN
IC	201	IC	TC9495F2
IC	401	IC	BA5996FM
IC	701	IC	BA05SFP
Q	101	Transistor	2SD1664
Q	102	Transistor	UMD2N
L	201	Inductor	CTF1546
L	202	Inductor	CTF1546
X	301	Ceramic Resonator 16.934MHz	CSS1525
S	901	Spring Switch(HOME)	CSN1051
S	902	Spring Switch(CLAMP)	CSN1052
S	903	Spring Switch(DSCSNS)	CSN1051
S	904	Spring Switch(12EJ)	CSN1052
S	905	Spring Switch(8EJ)	CSN1051

RESISTORS

R	101	RS1/16S222J
R	102	RS1/8S120J
R	103	RS1/8S100J
R	201	RS1/16S513J
R	202	RS1/16S513J
R	203	RS1/16S823J
R	204	RS1/16S823J
R	206	RS1/16S823J
R	208	RS1/16S124J
R	209	RS1/16S183J
R	210	RS1/16S153J
R	211	RS1/16S103J
R	212	RS1/16S103J
R	213	RS1/16S124J
R	215	RS1/16S0R0J
R	216	RS1/16S471J
R	301	RS1/16S333J
R	302	RS1/16S332J
R	303	RS1/16S332J
R	304	RS1/16S514J
R	306	RS1/16S102J
R	307	RS1/16S102J
R	312	RS1/16S103J
R	313	RS1/16S473J
R	315	RS1/16S334J
R	321	RS1/16S331J
R	322	RS1/16S0R0J
R	323	RS1/16S332J
R	401	RS1/16S684J
R	402	RS1/16S103J
R	403	RS1/16S103J
R	404	RS1/16S183J
R	405	RS1/16S123J
R	407	RS1/16S622J
R	408	RS1/16S622J
R	409	RS1/16S113J
R	410	RS1/16S752J
R	701	RS1/16S102J
R	702	RS1/16S221J
R	703	RS1/16S221J
R	704	RS1/16S221J
R	705	RS1/16S221J
R	706	RS1/16S221J
R	707	RS1/16S221J
R	708	RS1/16S102J
R	709	RS1/16S102J
R	710	RS1/16S102J
R	901	RS1/16S104J
R	902	RS1/16S473J
R	903	RS1/16S273J

CAPACITORS

C	101	CEV470M6R3
C	102	CKSRYB102K50
C	103	CKSRYB104K16
C	104	CKSRYB224K16
C	105	CEV470M6R3
C	106	CKSRYB104K16
C	107	CKSRYB105K6R3
C	201	CKSRYB104K16
C	202	CCSRCH560J50
C	204	CKSRYB224K16
C	205	CKSRYB224K16
C	206	CKSRYB273K25
C	207	CKSRYB273K25
C	208	CKSRYB104K16
C	209	CKSRYB104K16
C	210	CCSRCK2R0C50
C	211	CCSRCH220J50
C	301	CKSRYB153K25
C	302	CKSRYB104K16
C	303	CKSRYB103K50
C	304	CKSRYB103K50
C	305	CKSRYB104K16
C	306	CKSRYB104K16
C	307	CKSRYB333K16
C	308	CKSRYB104K16

Circuit Symboland No.	Part Name	Parts No.
C 309		CKSRYB473K16
C 310		CKSRYB473K16
C 311		CKSRYB104K16
C 312		CKSRYB104K16
C 315		CEV220M6R3
C 317		CKSRYB104K16
C 318		CKSRYB104K16
C 319		CKSRYB104K16
C 320		CCSRCH470J50
C 325		CKSRYB471K50
C 328		CKSRYB472K50
C 329		CKSRYB104K16
C 330		CKSRYB104K16
C 331		CKSRYB104K16
C 401		CKSRYB221K50
C 402		CKSRYB221K50
C 403		CKSRYB153K25
C 404		CKSRYB103K50
C 405		CEV101M10
C 702		CKSRYB104K16
C 703		CKSRYB104K16
C 801	10µF/10V	CCH1349
C 802		CEV101M10
C 803		CKSRYB224K16

Miscellaneous Parts List

		Pickup Unit(Service)(P9)	CXX1480
M	1	Motor Unit(SPINDLE)	CXB6007
M	2	Motor Unit(LOADING/CARRIAGE)	CXB5903

6. ADJUSTMENT
6.1 CD ADJUSTMENT

1) Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to VREF(approx. 2.1V) instead of GND.
  If VREF and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
  Do not connect the negative probe of the measuring equipment to VREF and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to VREF with the channel 2 negative probe connected to GND.
  Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
  If by accident VREF comes in contact with GND, immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

- Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

- The RFI and RFO signals are easy to oscillate because of a wide band. When observing them, insert a resistor of about 1 kΩ to the series.

- This equipment will not guarantee the load ejection operation when the mechanical unit is turned upside down. In particular, if the ejection operation is incorrectly performed and recovery is disabled, the recovery is enabled by resetting a product or turning ACC off to on.

2) Test Mode

This mode is used for adjusting the CD mechanism module of the device.

- Test mode starting procedure
  Reset while pressing the **4** and **6** keys together.

- Test mode cancellation
  Switch ACC, back-up OFF.

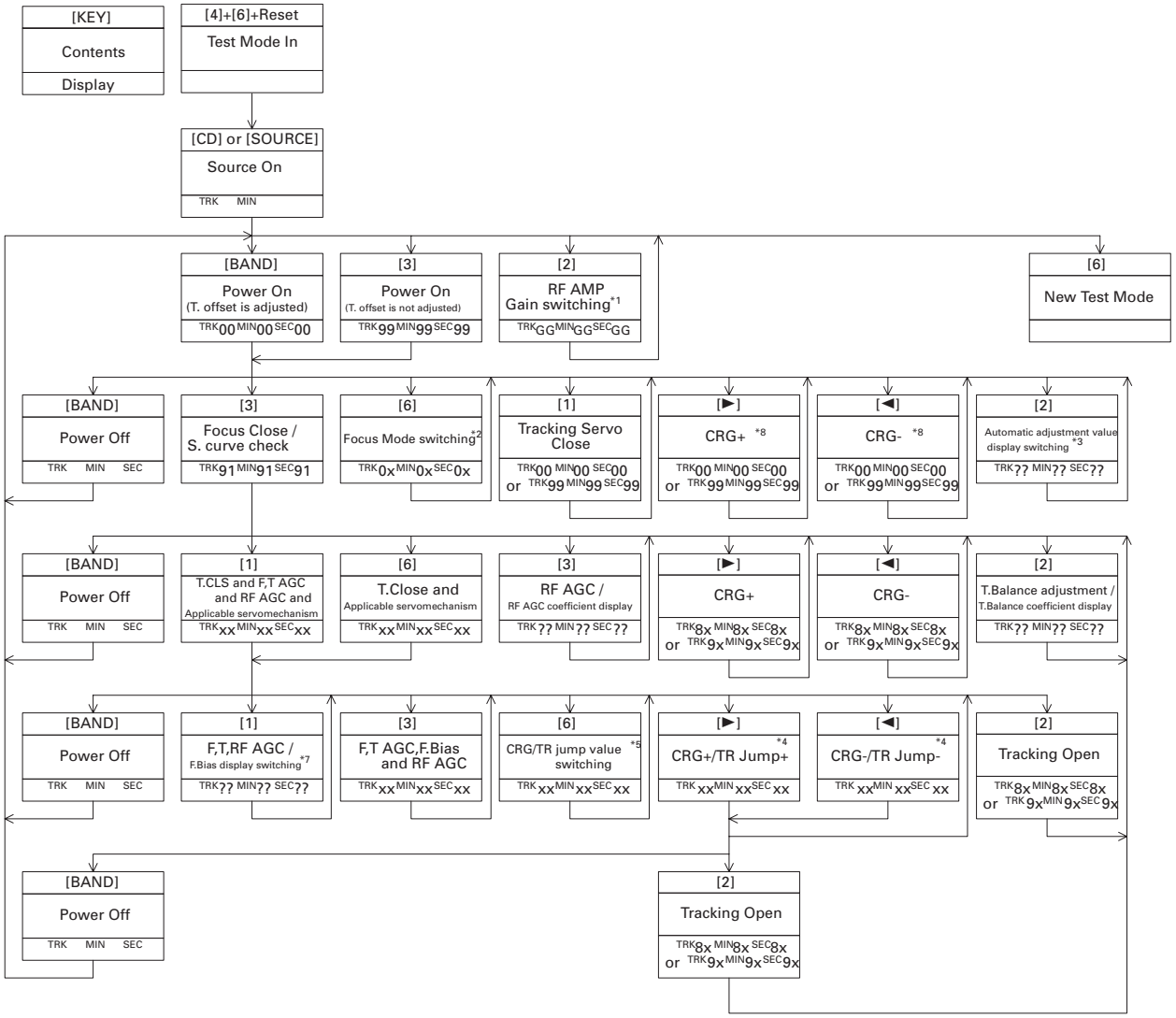
- After pressing the EJECT key, do not press any other key until the disk is completely ejected.

- If the ► or ◄ key is pressed while focus search is in progress, immediately turn the power off (otherwise the actuator may be damaged due to adhesion of the lenses).

- Jump operation of TRs other than 100TR continues after releasing the key. CRG move and 100TR jump operations are brought into the “Tracking close” status when the key is released.

- Powering Off/On resets the jump mode to “Single TR(91)”, the RF AMP gain setting to 0 dB, and the automatic adjustment value to the initial value.

● Flow Chart



*1) TYP (TRK MIN SEC) → +12dB (TRK12 MIN12 SEC12)

*2) Focus Close setting (TRK00 MIN00 SEC00 or TRK99 MIN99 SEC99) → S. curve check setting (TRK01 MIN01 SEC01) → F. EQ measurement setting (TRK02 MIN02 SEC02)

*3) F.Offset Display → T.Offset Display → Switch to the order of the original display

*4) 1TR/32TR/100TR

*5 Single TR (TRK91 MIN91 SEC91 or TRK81 MIN81 SEC81) → 32TR (TRK92 MIN92 SEC92 or TRK82 MIN82 SEC82) → 100TR (TRK93 MIN93 SEC93 or TRK83 MIN83 SEC83) → CRG Move (TRK94 MIN94 SEC94 or TRK84 MIN84 SEC84)

*6) Only at the time of CRG move or 100TR jump

*7) TRK/MIN/SEC → F.AGC Gain → T.AGC Gain → F.Bias → RF AGC Gain

*8) CRG motor voltage = 2 [V]

[Key]	Operation	
	Test Mode	New Test Mode
[BAND]	Power On/Off	Error occurrence time/ cause display switching
[►]	CRG +/TR Jump+ (Direction of the external surface)	TRK+/FF
[◄]	CRG -/TR Jump- (Direction of the internal surface)	TRK-/REV
[1]	T.CLS and AGC and Applicable servomechanism/ AGC,AGC display switching	SCAN
[2]	RF Gain switching/Offset adjustment display/ T.Balance adjustment/T.OPN	MODE
[3]	F.CLS,S.Curve/Rough Servo and RF AGC/ F,T,RF AGC	(ITP)
-	SPDL 1X/2X switching (Double-speed compatibility only)	-
-	Error rate measurement	-
[6]	F.Mode switching/T.CLS/CRG,TR Jump switching	Auto/Manual switching

6.2 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

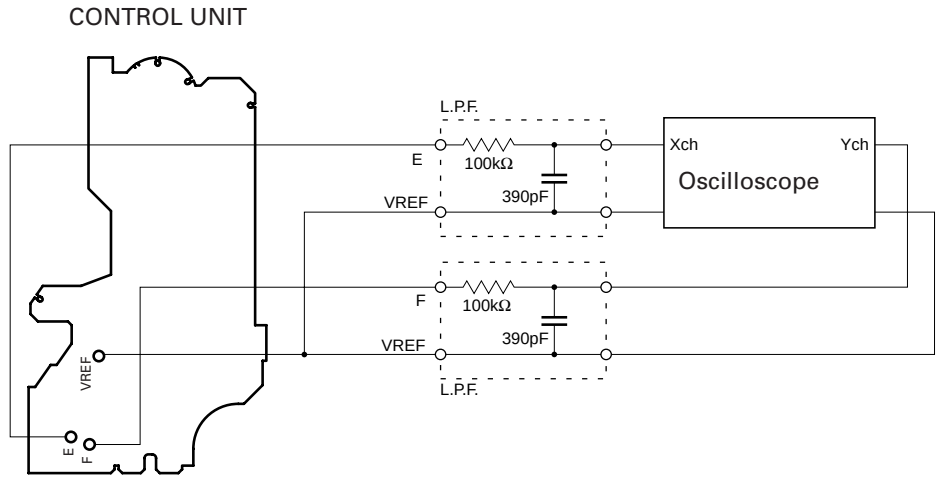
• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

• **Purpose :**
To check that the grating is within an acceptable range when the PU unit is changed.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, VREF
• Disc	• ABEX TCD-784
• Mode	• TEST MODE



• **Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the ► and ◄ buttons, move the PU unit to the innermost track.
3. Press key **3** to close focus, the display should read "91". Press key **2** to implement the tracking balance adjustment the display should now read "81". Press key **3**. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

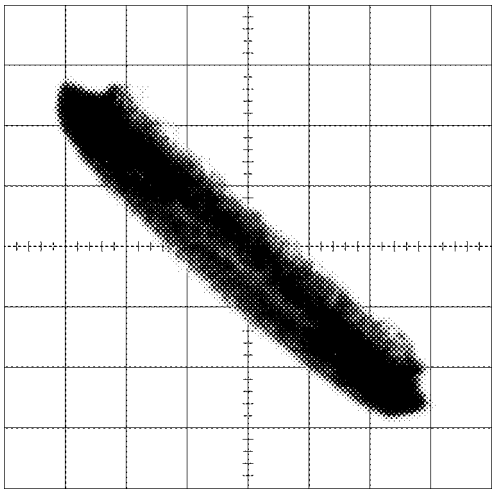
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

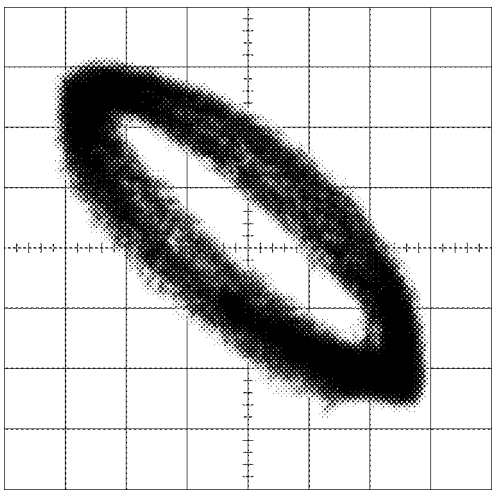
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

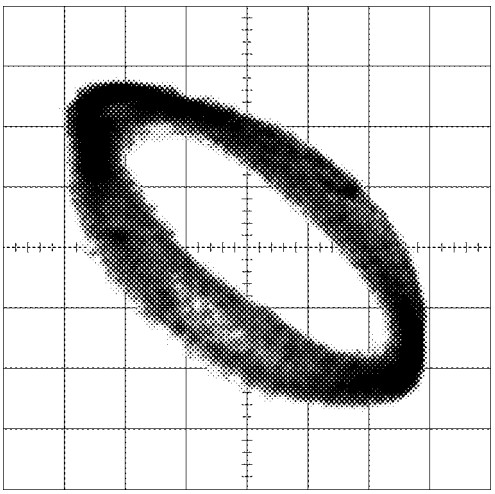
0°



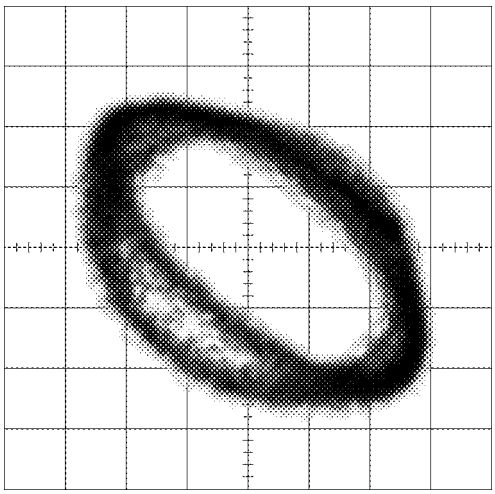
30°



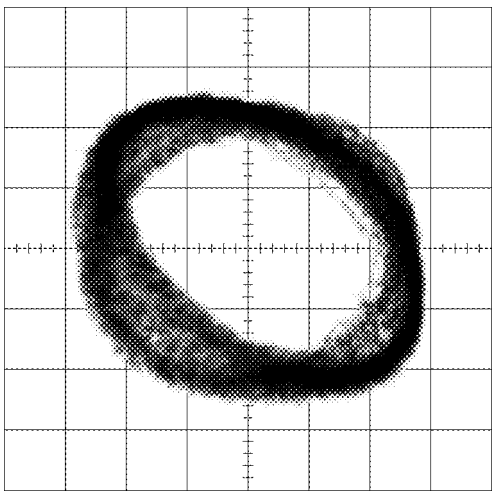
45°



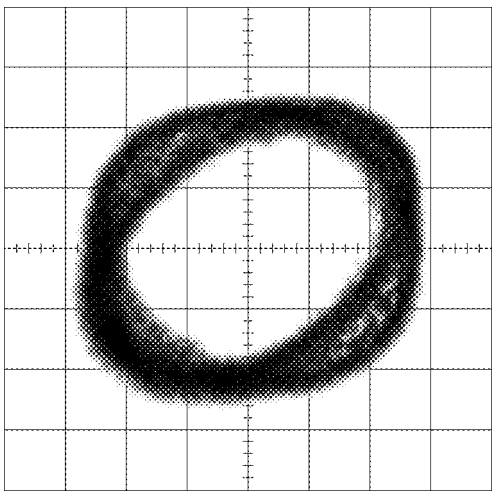
60°



75°



90°



6.3 TEST MODE

● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

(1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display	6-digit display	4-digit display
ERROR–xx	ERR–xx	E–xx

(2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Communication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. → Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. → Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). → Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. → Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. → CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. → Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. → Failure on SW transistor or power supply (failure on connector).

Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

● New Test Mode

S-CD plays the same way as before.

If an error such as off focus, spindle unlocking, unreadable sub-code, or sound skipping occurs after setup, its cause and time occurred (in absolute time) are displayed.

During setup, operational status of the control software is displayed.

These displays and functions are prepared for enhancing aging in the servicing and efficiency of trouble analysis.

(1) Shifting to the New Test Mode

① Turn on the current test mode by starting the reset from the key.

② Select S-CD for the source through the specified procedure including use of the [SOURCE] key, and inser disc. Then, press the [Jump Mode Selector] key while maintaining the regulator turned off.

③ After the above operations, the new test mode remains on irrespective of whether the S-CD is turned on or off. You can reset the new test mode by turning on the reset start.

(2) Key Correspondence

Key	Test mode		New test mode	
	Regulator Off	Regulator On	In-play	Error Production
BAND	To regulator on	To regulator off	–	Time/Err.No. switching
►	–	FWD-Kick	FF/TR+	–
◄	–	REV-Kick	REV/TR-	–
1	–	Tracking Close	Scan	–
2	–	Tracking Open	Mode	–
3	–	Focus Close	–	–
–	–	Focus Open ting the	–	–
–	–	Jump Off	–	–
6	To new test mode	Jump mode switching	Auto/Manu	–

Note: Eject and CD on/off is performed in the same procedure as that for the normal mode.

(3) Cause of Error and Error Code

Code	Class	Contents	Description and cause
40	Electricity	Off focus detected.	FOK goes low. → Damages/stains on disc, vibrations or failure on servo.
41	Electricity	Spindle unlocked.	LOCK = Low continued for 150 msec. → Damages/stains on disc, vibrations or failure on servo.
42	Electricity	Sub-code unreadable.	Sub-code was unreadable for 500 msec. → Damages/stains on disc, vibrations or failure on servo.
43	Electricity	Sound skipping detected.	Last address memory function was activated. → Damages/stains on disc, vibrations or failure on servo.

Note: Mechanical errors during aging are not displayed.

(4) Display of Operational Status during Setup

Status No.	Contents	Protective action
21	Focus search start	Focus search timeout.
22	Focus search 2	Focus search timeout.
23	Focus search 3	Focus search timeout.
24	Focus search 4	Focus search timeout.
25	Focus search(Setup protection)	Focus slips off.
26	Focus search(Fast recovery)	Focus slips off.
27	RF detection	Focus slips off.
28	Spindle rough servocontrol	Focus slips off.
29	Tracking balance adjustment start	Focus slips off.
30	Tracking balance adjustment 2	Focus slips off.
31	Tracking balance adjustment 3	Focus slips off.
32	Tracking close start(Spindle stationary servocontrol setting)	Focus slips off.
33	Tracking close 2	Focus slips off.
34	Tracking close 3	Focus slips off.
35	Focus/Tracking AGC start	Focus slips off.
36	Focus/Tracking AGC 2	Focus slips off.
37	Focus/Tracking AGC 3	Focus slips off.
38	Focus/Tracking AGC 4	Focus slips off.
39	Focus/Tracking AGC 5	Focus slips off.
40	Focus/Tracking AGC 6	Focus slips off.
41	Focus/Tracking AGC 7	Focus slips off.
42	Focus/Tracking AGC 8	Focus slips off.
43	FE bias start	Focus slips off.
44	FE bias 2	Focus slips off.
45	RF AGC start	Focus slips off.
46	RF AGC 2	Focus slips off.
47	Lock check start	Focus slips off.
48	Lock is being checked	Focus slips off.
49	Subcode check start	Focus slips off, spindle lock is not performed.
50	Subcode is being checked	Focus slips off, no subcode can be read.

(5) Display Examples

1) During Setup

8-digit display, 6-digit display	4-digit display(Auto setting)	4-digit display(Manual setting)
TNO. Min Sec	TNO.	Min Sec
11 11' 11"	11	11' 11"

2) During Operation (TOC read, TRK search, Play, FF and REV)

The same as in the normal mode.

3) When a Protection Error Occurred

(A) Error display ((A)←→(B), (C) : BAND key)

8-digit display	6-digit display	4-digit display
ERROR-xx	ERR-xx	E-xx

(B) Error occurrence timing display in track no. ((B)←→(C) : Auto/Manual key)

8-digit display, 6-digit display	4-digit display(Auto setting)
TNO. Min Sec	TNO.
10 40' 05"	10

(C) Error occurrence timing display in absolute time. ((B)←→(C) : Auto/Manual key)

8-digit display, 6-digit display	4-digit display(Manual setting)
TNO. Min Sec	Min Sec
10 40' 05"	40' 05"

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Case (not shown)**

1. Remove the Case.

● **Removing the CD Mechanism Module (Fig.1)**

1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module.

● **Removing the Grille Panel Assy (Fig.1)**

2 Remove the two screws and then remove the Grille Panel Assy.

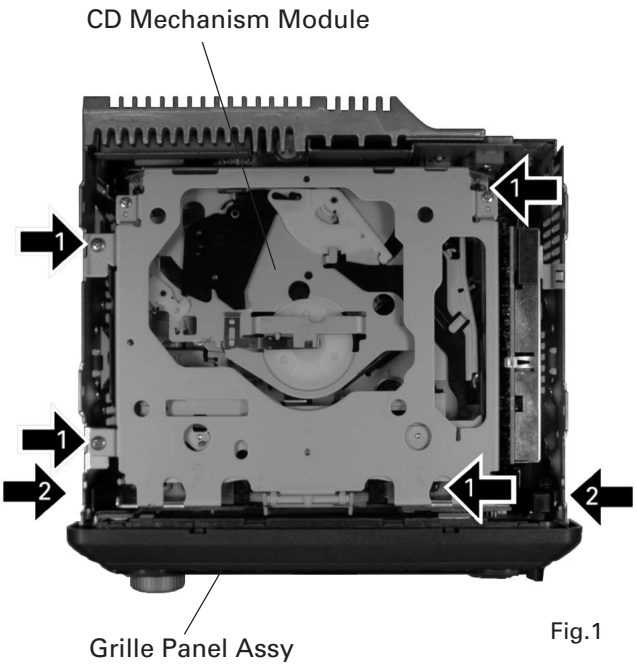


Fig.1

● **Removing the Tuner Amp Unit (Fig.2)**

1 Remove the two screws.

2 Straight the tabs at three locations indicated.

3 Remove the screw.

4 Remove the three screws and then remove the Tuner Amp Unit.

*) Tuner Amp Unit is different partially from this photo.

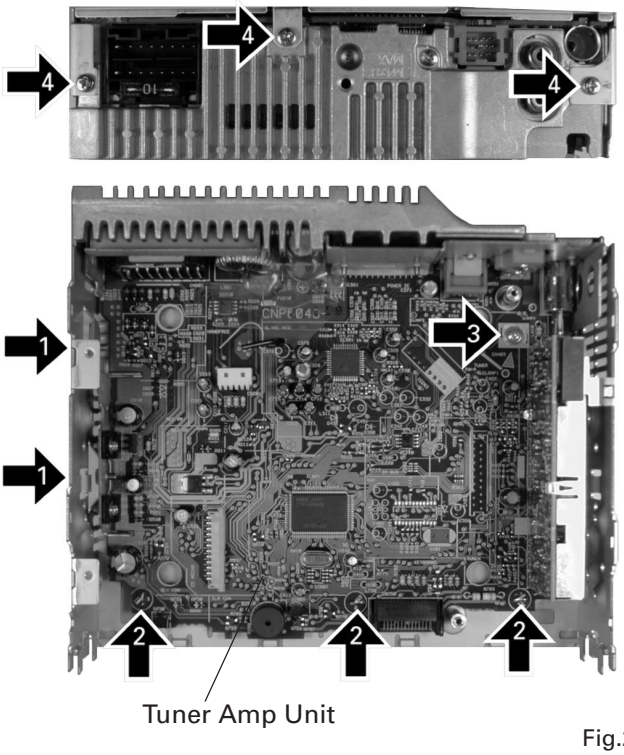
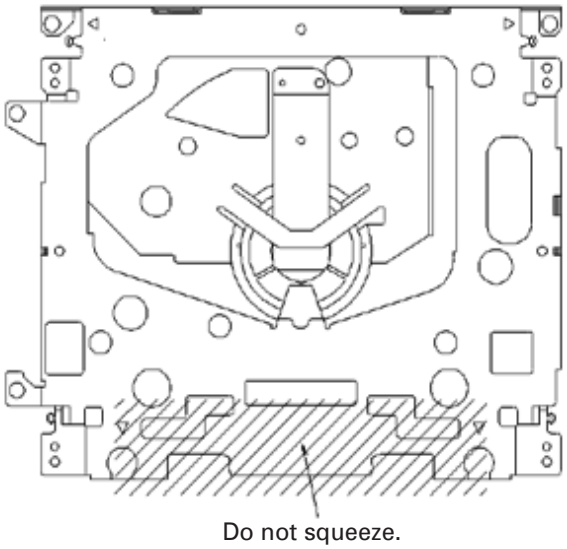


Fig.2

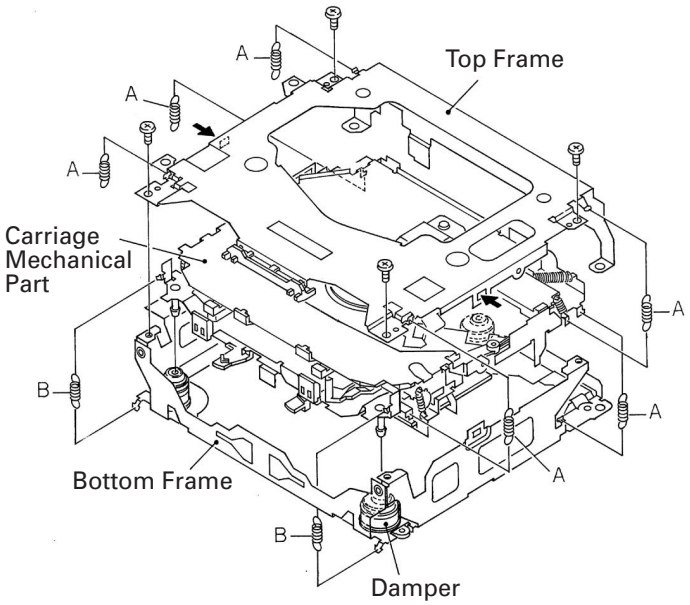
● How to hold the Mechanical Unit

1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.



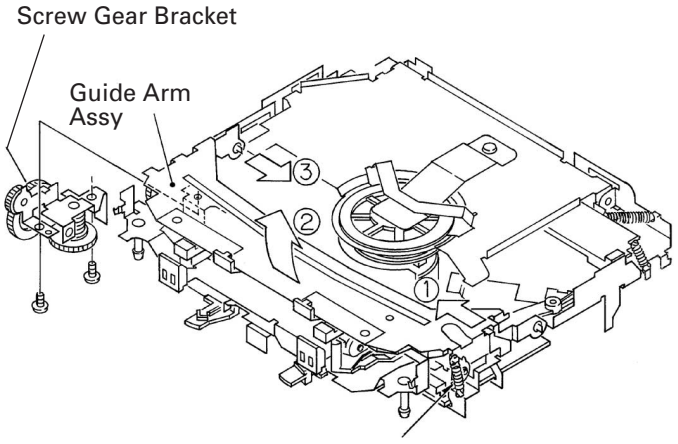
● How to remove the Top and Bottom Frame

1. When the disk is "clamp" state, unlock Spring A (6 pieces) and Spring B (2 pieces), and unscrew screws (4 pieces).
2. Unlock each 1 of pawl at the both side of the frame, then remove the top frame.
3. Remove the Carriage Mechanical part in such way that; you remove the mechanical part from 3 pieces of Damper while slowly pulling up the part.
4. Now, the top frame has been removed, and under this state, fix the genuine Connector again, and eject the disk.
   (Caution)
   When you reassemble the Carriage Mechanical part, apply a bit of alcohol to Dampers.



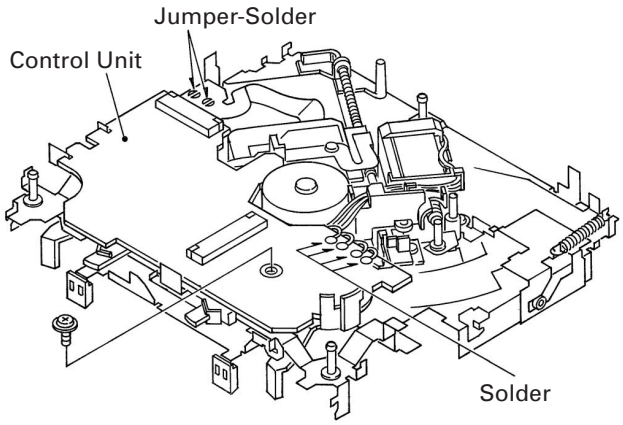
● How to remove the Guide Arm Assy

1. Unlock the spring (1 piece) at the right side of the assembly.
2. Unscrew screws (2 pieces), then remove the Screw Gear Bracket.
3. Shift the Guide Arm Assy to the left and slowly rotate it to the upper direction.
4. When the Guide Arm Assy rotates approximately 45 degree, shift the Assy to the right side dir
   remove it.



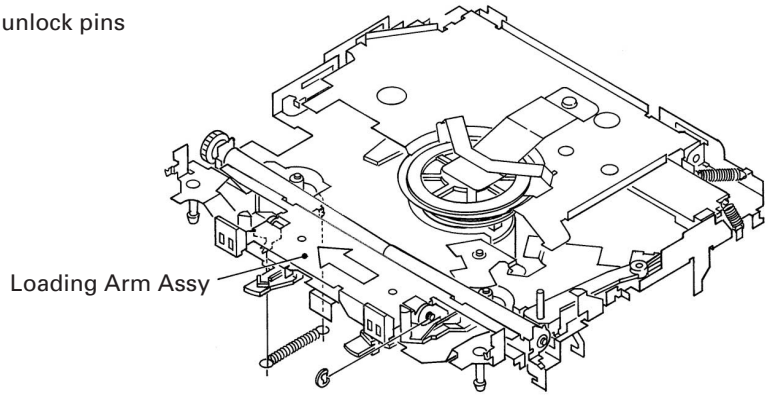
● How to remove the Control Unit

1. Give jumper-solder treatment to the Flexible Wire of the Pickup unit, then remove the wire from the Connector.
2. Remove all 4 points of solder-treatment on the Lead Wire. Also, unscrew the screw(1 piece).
3. Then, Remove the Control unit.
   (Caution)
   Be careful not to damage SW when you reassemble the Control Unit into the device.



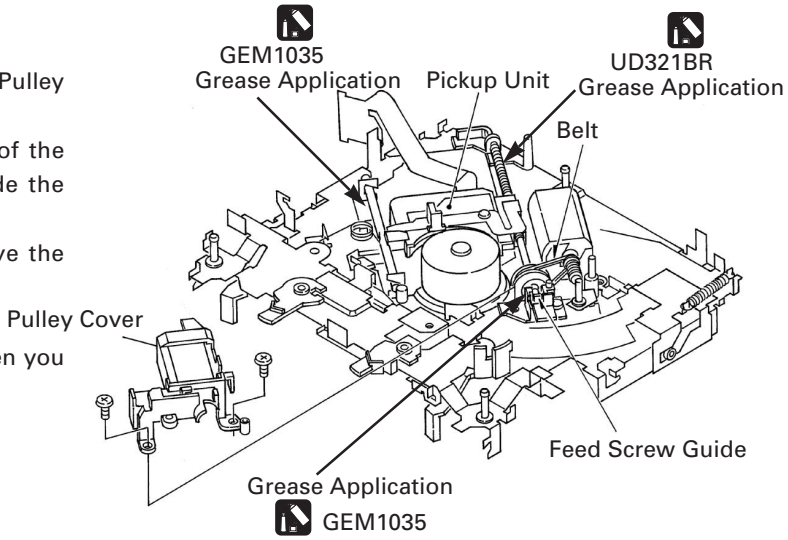
● How to remove the Loading Arm Assy

1. Unlock the spring (1 piece) and remove the E ring (1 piece) of the Fulcrum Shaft.
2. Shift the arm to the left side direction and unlock pins (2 pieces).

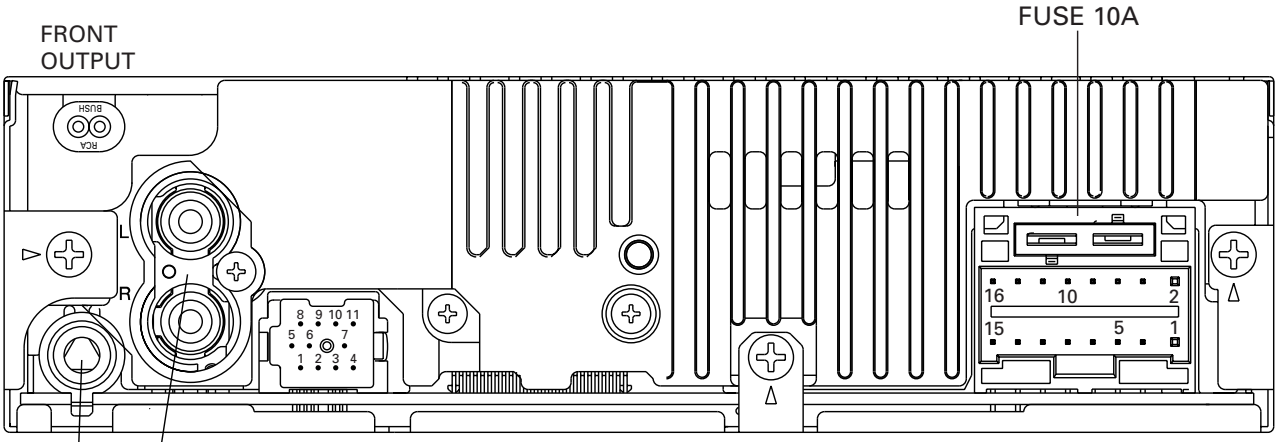


● How to remove the Pickup Unit

1. Unscrew 2 pieces of screws, then remove the Pulley Cover.
2. Remove the Feed Screw unit from the pawl of the Feed Screw Guide (The pawl is located inside the guide).
3. Remove the belt from the Pulley, then remove the Pickup unit.
   (Caution)
   Make sure not to stain the belt with grease when you fix the belt.



7.1.2 CONNECTOR FUNCTION DESCRIPTION



1. BUS+
2. GND
3. GND
4. NC
5. BUS-
6. GND
7. BUS L+ INPUT
8. ASENB
9. BUS R+ INPUT
10. BUS R- INPUT
11. BUS L- INPUT

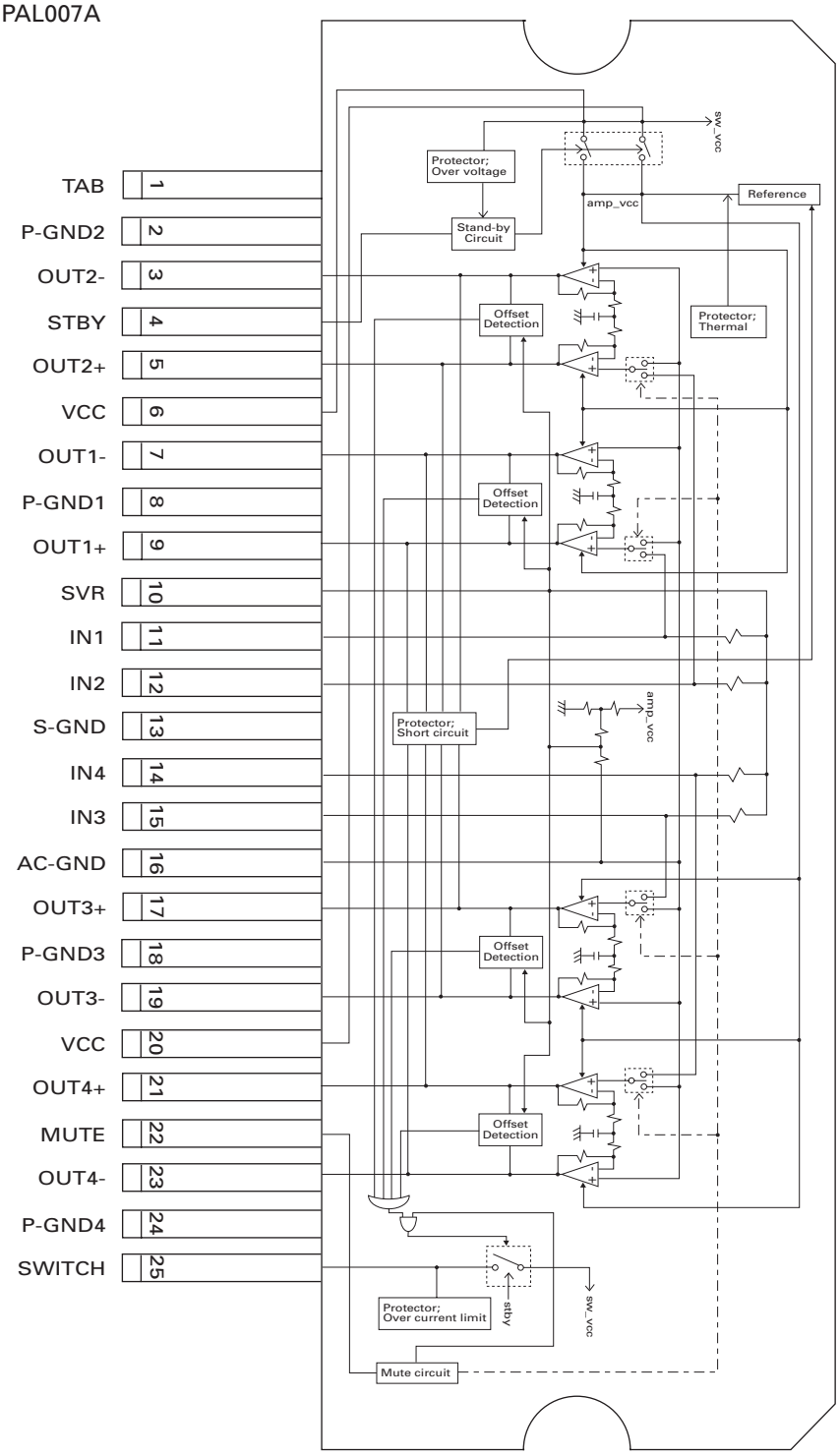
1. GND
2. B.UP
3. ACC
4. NC
5. ILM
6. B.REM
7.NC
8. NC
9. RL-
10. FL-
11. RL+
12. FL+
13. RR-
14. FR-
15. RR+
16. FR+

REAR OUTPUT

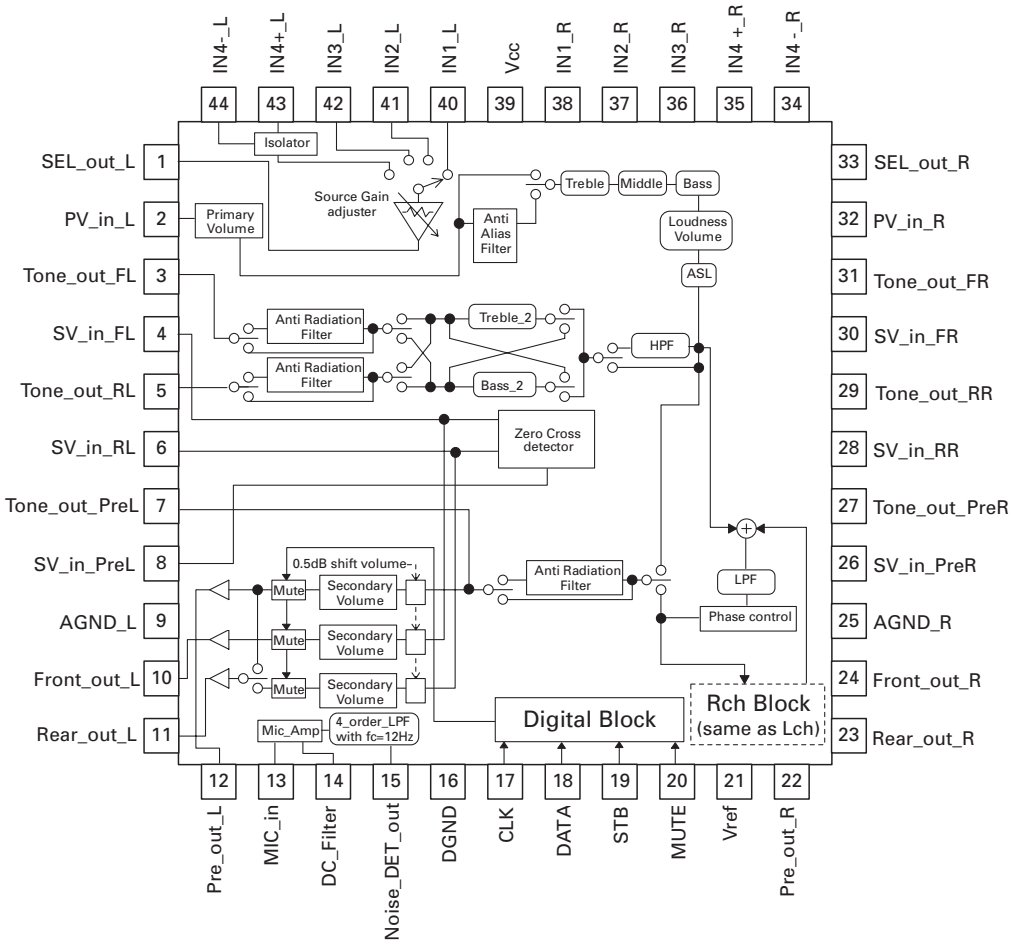
ANTENNA JACK

7.2 PARTS
7.2.1 IC

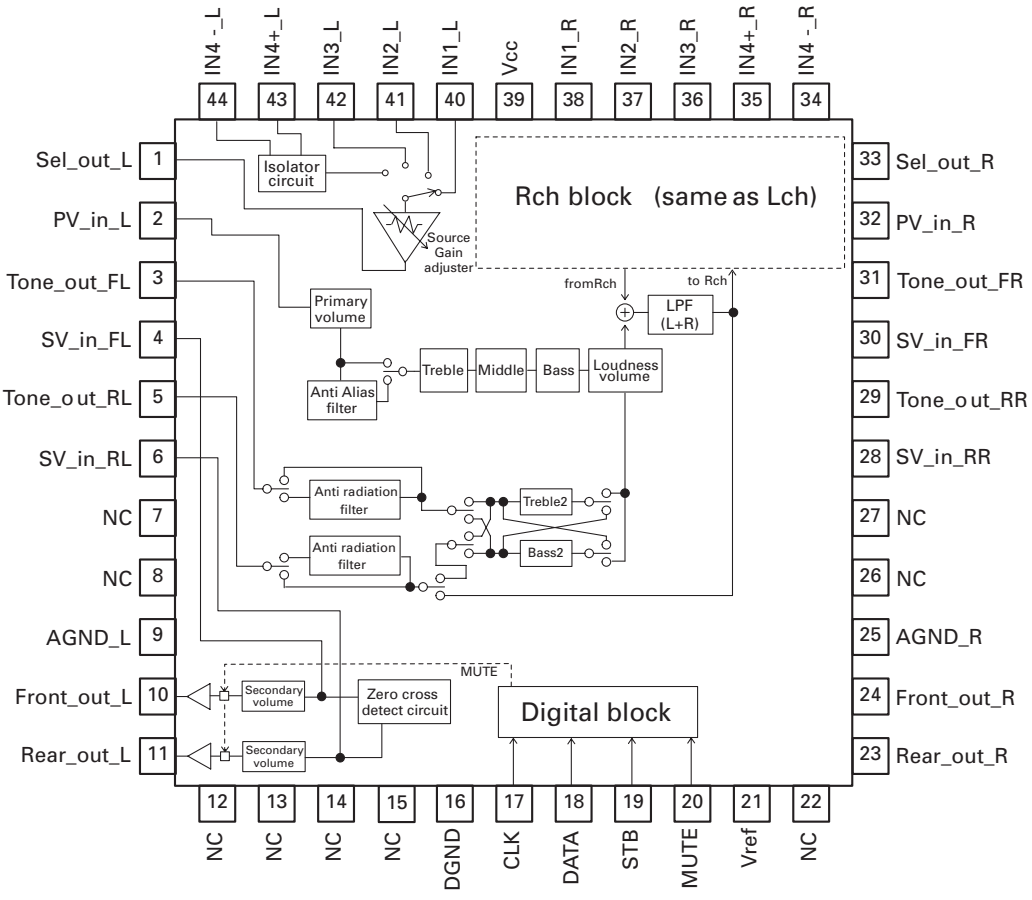
PAL007A



PML009A(DEH-P440/XN/UC)



PML008A(DEH-P4400/XN/UC, DEH-P44/XN/UC)

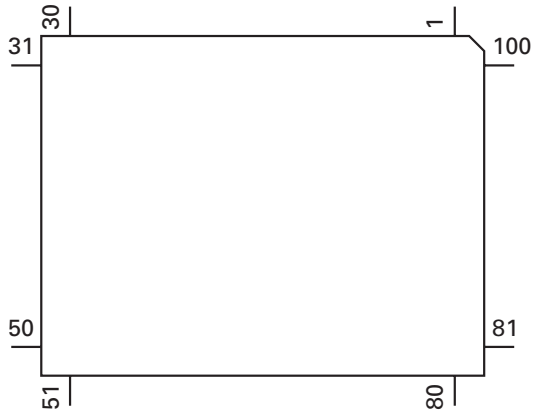


● Pin Functions (PE5246A)

Pin No.	Pin Name	I/O	Function and Operation
1	NC		Not used
2	$\overline{\text{DSENS}}$	I	Grille detach sense input
3	NC		Not used
4	EJECTIN	I	Eject sense input
5	TESTIN	I	Test program mode input
6	LCDPW	O	LCD back light power supply control output
7	TELIN	I	Telephone mute input
8	$\overline{\text{ISENS}}$	I	Illumination sense input
9	FLPILM	O	Flap illumination input
10	DALMON		For consumption low-current
11	$\overline{\text{RESET}}$	I	Reset input
12	XT2		Not used (open)
13	XT1		Clock connection pin
14	VSS(GND)		GND
15	X2		Crystal oscillator connection pin
16	X1		Crystal oscillator connection pin
17	REGOFF		Regulator operation specification signal
18	REGC		Capacitor for regulator connect pin
19	VDD		Power supply
20	ILMPW	O	Illumination power supply control output
21	SYSPW	O	System power control output
22	$\overline{\text{ADPW}}$	O	A/D converter power supply control output
23	SWVDD	O	Grille:Chip enable output
24	IPPW	O	Power supply control output for IP BUS interface IC
25	ROT1	I	Rotary input 1
26-31	NC		Not used
32	$\overline{\text{PCE2}}$	O	EEPROM chip enable output
33	STB	O	Strobe pulse output for electronic volume
34	CLK	O	Clock output for electronic volume
35	DATA	O	Data output for electronic volume
36	NC		Not used
37	MUTE	O	System mute output
38	SD	I	Station detector input
39	$\overline{\text{ST}}$	I	FM stereo input
40	VSS(GND)		GND
41	VDD		Power supply
42	$\overline{\text{FM}}$/AM	O	TUNER:Decoder power supply control output
43-49	NC		Not used
50	LOCL	O	Local L output
51	LOCH	O	Local H output
52,53	NC		Not used
54	LOEJ	O	CD:Load Motor Load/Eject output
55	CLCONT	O	CD:Driver input switch output
56	CD5VON	O	CD:Power supply control output
57	VDCONT	O	CD:VD power control output
58-61	XPI3-0	I/O	CD:LSI data input/output
62	PCL		Clock adjustment
63	CONT	O	CD:Servo driver power supply control output
64	HOME	I	CD:CRG HOME detection input
65	NC		Not used
66	XPCK	O	CD:LSI clock output
67	NC		Not used
68	$\overline{\text{XRST}}$	O	CD:LSI reset control output
69	NC		Not used
70	$\overline{\text{XCE}}$	O	CD:LSI chip enable output
71	ASENBO	O	IP-BUS:Slave power supply control output
72	MUTE	O	E.VOL:Mute control output
73	TEST(GND)	I	GND

Pin No.	Pin Name	I/O	Function and Operation
74	SL	I	TUNER:Signal level input
75	NC		Not used
76	MODELIN	I	Model select input
77	CSENS	I	Flap close sense input
78	EJTSNS	I	CD:Eject sense input
79	DSCSNS	I	CD:Disc insert sense input
80	VDSENS	I	CD:VD voltage sense input
81	TEMP	I	CD:Temperature sense input
82	AVDD		A/D converter power supply terminal
83	AVREF		A/D converter reference voltage terminal
84	AVSS		GND
85	RX	I	IP-BUS:data input
86	TX	O	IP-BUS:data output
87	NMI		GND
88	$\overline{\text{LDET}}$	I	PLL lock sense input
89-91	NC		Not used
92	$\overline{\text{ASENS}}$	I	ACC power sense input
93	$\overline{\text{BSENS}}$	I	Back up power sense input
94	TUNPDI	I	PLL IC data input
95	KYDT	I	Grille data input
96	DPDT	O	Grille data output
97	PCK	O	PLL IC clock output
98	PDO	O	PLL IC data output
99	PCE	O	PLL IC chip enable output
100	PEE	O	Beep tone output

*PE5246A

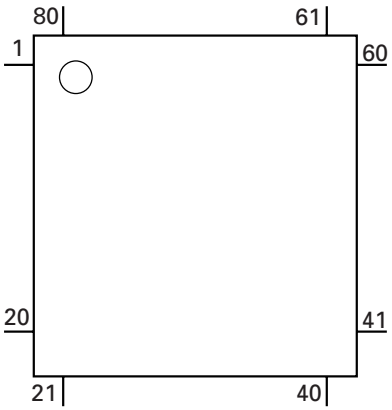


IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

● Pin Functions (PD6294A)

Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2	X1		Crystal oscillator connection pin
3	X0		Crystal oscillator connection pin
4	NC		Not used
5,6	MOD1,0	I	Connect to GND
7	DIMMER	O	Dimmer select output
8	KYDT	O	Key data output
9	DPDT	I	Display data input
10	REMIN	I	Remote control pulse input
11	GRN		Dual Illumination (Green)
12	AMB		Dual Illumination (Amber)
13–16	KD4–1	I	Key data input
17-22	KST6–1	O	Key strobe output
23	VDD		VDD
24-73	SEG49–0	O	LCD segment output
74–77	COM3–0	O	LCD common output
78	VLCD	I	LCD voltage input
79,80	V2,1		Power supply terminal

*PD6294A



● Pin Functions(TA2153FN)

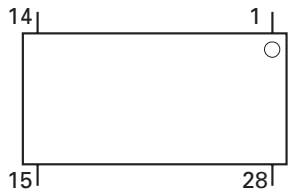
Pin No.	Pin Name	I/O	Function and Operation
1	VCC		Power supply voltage terminal
2	RFGC	I	RF amplitude adjustment control signal terminal
3	GMAD	I	AGC amplifier frequency characteristic adjustment terminal
4	FNI	I	Main beam amplifier input terminal
5	FPI	I	Main beam amplifier input terminal
6	TPI	I	Sub beam amplifier input terminal
7	TNI	I	Sub beam amplifier input terminal
8	MDI	O	Monitor photodiode amplifier input terminal
9	LDO	I	Laser diode amplifier output terminal
10	SEL	I	APC circuit ON/OFF signal, LDO terminal control input terminal and bottom and peak detection frequency switching terminals
11	TEB	I	Tracking error balance adjustment signal input terminal
12	2VRO	O	Reference voltage (2VRO) output terminal
13	TEN	I	Tracking error signal generation amplifier reverse phase input terminal
14	TEO	O	Tracking error signal generation amplifier output terminal
15	SBAD	O	Sub beam addition signal output terminal
16	FEO	O	Focus error signal generation amplifier output terminal
17	FEN	I	Focus error signal generation amplifier reverse phase input terminal
18	SEB	I	RFRP generation circuit mode switching terminal
19	VRO	O	Reference voltage (VREF) output terminal
20	RFRP	O	Signal generation amplifier output terminal for track count
21	BTC	I	Bottom detection time constant adjustment terminal for RFCT signal generation
22	RFCT	O	RFRP signal center level output terminal
23	PKC	I	Peak detection time constant adjustment signal for RFCT signal generation
24	RFRPIN	I	Signal generation amplifier input terminal for track count
25	RFGO	O	RF signal amplitude adjustment amplifier output terminal
26	GVSW	I	AGC, FE or TE amplifier gain switching terminal
27	AGCIN	I	RF signal amplitude adjustment amplifier input terminal
28	RFO	O	RF signal generation amplifier output terminal
29	GND	I	GND terminal
30	RFN2	I	RF signal generation amplifier input terminal

TA2153FN

● Pin Functions(BA5996FM)

Pin No.	Pin Name	Function and Operation
1	VR	Input pin for reference voltage
2	OPIN2(+)	Input pin for non-inverting input for CH2 preamplifier
3	OPIN2(-)	Input pin for inverting input for CH2 preamplifier
4	OPOUT2	Output pin for CH2 preamplifier
5	OPIN1(+)	Input pin for non-inverting input for CH1 preamplifier
6	OPIN1(-)	Input pin for inverting input from CH1 preamplifier
7	OPOUT1	Output pin for CH1 preamplifier
8	GND	Ground pin
9	MUTE	Mute control pin
10	POWVCC1	Power supply pin for CH1, CH2, and CH3 at "Power" stage
11	VO1(-)	Driver CH1 - Negative output
12	VO1(+)	Driver CH2 - Positive output
13	VO2(-)	Driver CH2 - Negative output
14	VO2(+)	Driver CH2 - Positive output
15	VO3(+)	Driver CH2 - Positive output
16	VO3(-)	Driver CH2 - Negative output
17	VO4(+)	Driver CH4 - Positive output
18	VO4(-)	Driver CH4 - Negative output
19	POWVCC2	Power supply pin for CH4 at "Power" stage
20	GND	Ground pin
21	CNT	Control pin
22	LDIN	Loading input
23	OPOUTSL	Output pin for preamplifier for thread
24	OPINSL	Input pin for preamplifier for thread
25	OPOUT3	CH3 preamplifier output pin
26	OPIN3(-)	Input pin for inverting input for CH3 preamplifier
27	OPIN3(+)	Input pin for non-inverting input for CH3 preamplifier
28	PREVCC	PreVcc

BA5996FM

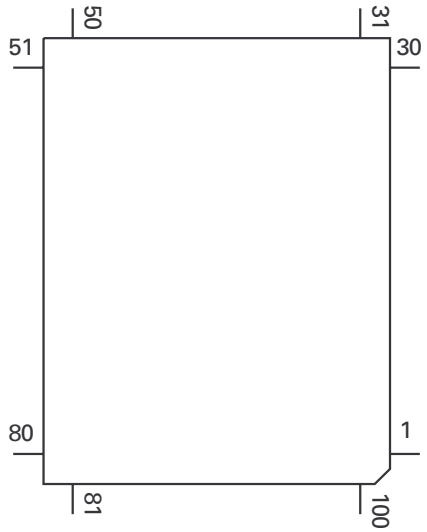


● **Pin Functions(TC9495F2)**

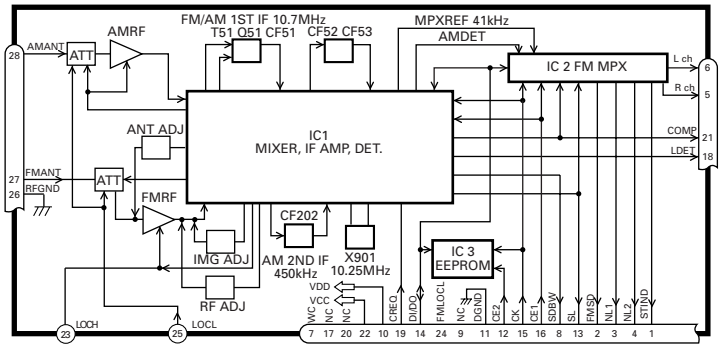
Pin No.	Pin Name	I/O	Function and Operation
1	TESTO		Test mode terminal
2	$\overline{\text{HSO}}$	O	Replay speed flag output terminal
3	$\overline{\text{UHSO}}$	O	Replay speed flag output terminal
4	EMPH	O	Emphasis flag output terminal for sub code Q data
5	LRCK	O	Channel clock (44.1 kHz) output terminal
6	VSS		Digital ground terminal
7	BCK	O	Bit clock output terminal
8	AOUT	O	Digital audio data output terminal
9	DOUT	O	Digital out output terminal
10	MBOV	O	Buffer memory over signal output terminal
11	IPF	O	Correction flag output terminal
12	SBOK	O	CRCC decision result output for sub code Q data
13	CLCK	I/O	Clock input/output terminal for sub code P-W data read
14	VDD		Digital + power supply terminal (5 V)
15	VSS		Digital ground terminal
16	DATA	O	Sub code P-W data output terminal
17	SFSY	O	Replay-system frame sync signal output terminal
18	SBSY	O	Sub code block sync output terminal
19	SPCK	O	Clock for processor status signal read
20	SPDA	O	Processor status signal output terminal
21	COFS	O	Correction-system frame clock (7.35 kHz) output terminal
22	MONIT	O	LSI internal signal output terminal
23	VDD		Digital + power supply terminal (5 V)
24	TESIO0	I	Test input/output terminal
25	P2VREF		PLL-system only 2VREF terminal
26	HSSW	O	The VREF voltage is reached for double or quad speed.
27	ZDET	O	One-bit DAC zero detection flag output terminal
28	PDO	O	Phase error signal issue between the EFM and PLCK signals
29	TMAXS	O	TMAX detection result output terminal
30	TAMX	O	TMAX detection result output terminal
31	LPFN	I	Reverse input terminal of amplifier for lowpass filter
32	LPFO	O	Output terminal of amplifier for lowpass filter
33	PVREF		PLL-system only VREF terminal
34	VCOREF	I	VCO center frequency reference level terminal
35	VCOF	O	Filter terminal for VCO
36	AVSS		Analog-system ground terminal
37	SLCO	O	Output terminal of DAC for data slice level generation
38	RFI	I	RF signal input terminal
39	AVDD		Analog-system power supply terminal (5 V)
40	RFCT	I	RFRP signal center level input terminal
41	RFZI	I	Input terminal for RFRP signal zero cross
42	RFRP	I	RF ripple signal input terminal
43	FEI	I	Focus error signal input terminal
44	SBAD	I	Sub beam addition signal input terminal
45	TSIN	I	Test input terminal
46	TEI	I	Tracking error input terminal
47	TEZI	I	Input terminal for tracking error or zero cross
48	FOO	O	Focus equalizer output terminal
49	TRO	O	Tracking equalizer output terminal
50	VREF		Analog reference power supply terminal
51	RFGC	O	RF amplitude adjustment control signal output terminal
52	TEBC	O	Tracking balance control signal output terminal
53	FMO	O	Feed equalizer output terminal
54	FVO	O	Speed error signal or feed search EQ output
55	DMO	O	Disc equalizer output terminal
56	2VREF		Analog reference power supply terminal
57	SEL	O	APC circuit ON/OFF signal output terminal

Pin No.	Pin Name	I/O	Function and Operation
58-61	FLGA-D	O	External flag output terminal for internal signal monitor
62	VDD		Digital + power supply terminal (5 V)
63	VSS		Digital ground terminal
64	IO0	O	RF amplifier gain switching terminal
65	IO1	O	Not used
66	IO2	I	HOME detection switch input terminal
67	IO3	O	FocusDrv and signal output terminal
68	$\overline{\text{DMOUT}}$	I	Field equalizer PWM output terminal for IO0 and IO1 Disc equalizer PWM output terminal for IO2 and IO3
69	$\overline{\text{CKSE}}$	I	Usually open
70	$\overline{\text{DACT}}$	I	DAC test mode terminal
71	TESIN	I	Test input terminal
72	TESIO1	I	Test input/output terminal
73	VSS		Digital ground terminal
74	PXI	I	DPS-system clock oscillator circuit input terminal
75	PXO	O	DPS-system clock oscillator circuit output terminal
76	VDD		Digital + power supply terminal (5 V)
77	XVSS		Ground terminal for system clock oscillator circuit
78	XI	I	System clock oscillator circuit input terminal
79	XO	O	System clock oscillator circuit output terminal
80	XVDD		For system clock oscillator circuit + power supply terminal
81	DVSR		R channel D/A converting unit power supply terminal
82	RO	O	R channel data forward rotation output terminal
83	DVDD		D/A converting unit power supply terminal (5 V)
84	DVR		Reference voltage terminal
85	LO	O	L channel forward rotation output terminal
86	DVSL		L channel D/A converting unit power supply terminal
87-89	TEST1-3	I	Test mode terminal
90-93	BUS0-3	I/O	Data input/output terminal for microcomputer interface
94	VDD		Digital + power supply terminal (5 V)
95	VSS		Digital ground terminal
96	BUCK	I	Clock terminal for microcomputer interface
97	$\overline{\text{CEE}}$	I	Chip enable signal for microcomputer interface
98	TEST4	I	Test mode terminal
99	$\overline{\text{TSMOD}}$	I	Test mode terminal
100	$\overline{\text{RST}}$	I	Reset signal input terminal

*TC9495F2



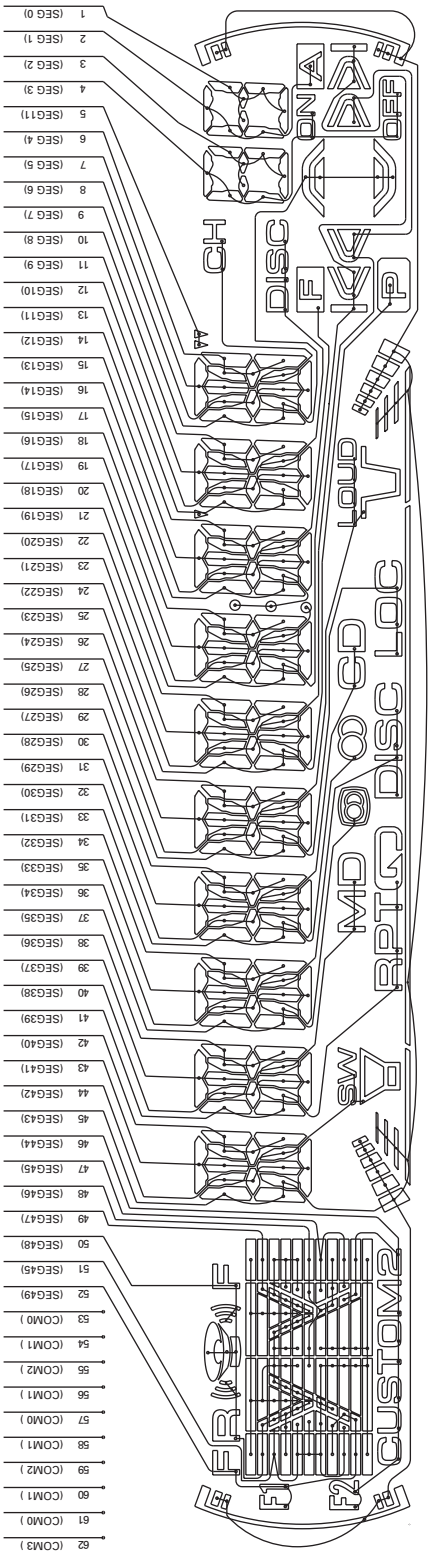
● FM/AM Tuner Unit



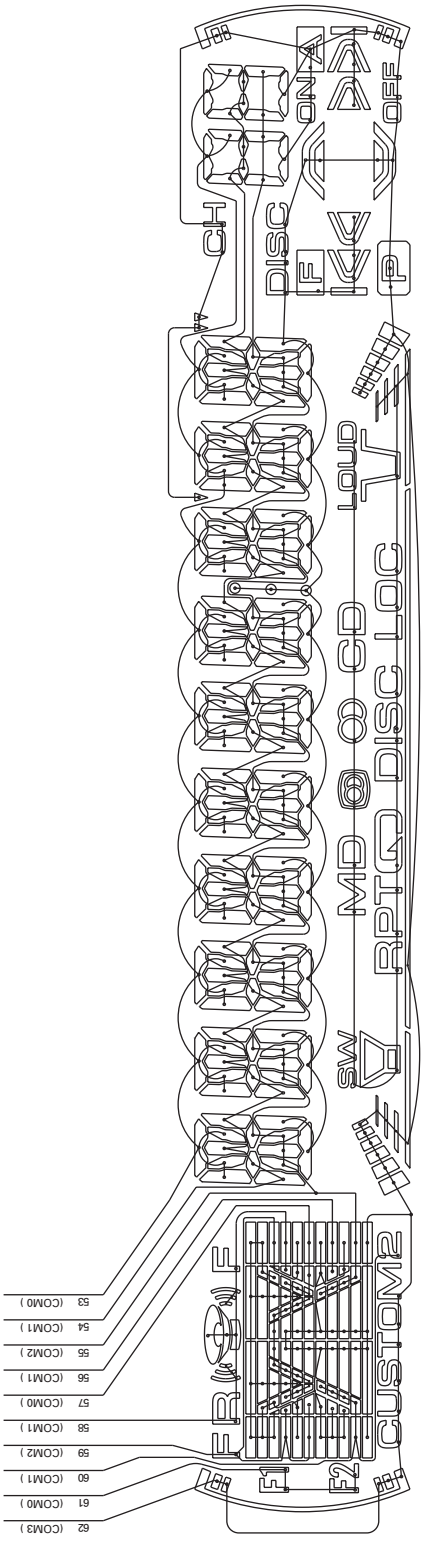
No.	Symbol	I/O	Explain	
1	STIND	O	stereo indicator	"Low" when the FM stereo signals are received. To be pulled up to the "VDD" at 47kΩ.
2	FMSD	O	FM station detector	"High" when signals are received. To be pulled up to the "VDD" at 47kΩ Meanwhile, 10kΩ should be used when taking diver FIX trigger from here and "High: 0.9VDD or more" and "Low: 250mV or less". (Should satisfy the diver IC specifications)
3	NL1	O	noise level-1	"High" when noise is received. Output for the RDS. GND at 47kΩ //1,800pF.
4	NL2	O	noise level-2	"High" when noise is received. Output for the RDS. GND at 36kΩ //330pF.
5	Rch	O	R channel output	FM stereo "R-ch" signal output or AM audio output. Add the specified de-emphasis constant.
6	Lch	O	L channel output	FM stereo "L-ch" signal output or AM audio output. Add the specified de-emphasis constant.
7	WC		write control	EEPROM write control. Writing permissible at "Low". Normally open.
8	SDBW	O	SD bandwidth	SD bandwidth signal output. For detection of detuning data for the RDS.
9	NC			Not used
10	VDD		power supply	Power supply pin for the digital section. DC 5V +/- 0.25V. Be careful about overlapping noise in the logic section.
11	DGND		digital ground	Grounding for the digital section.
12	CE2	I	chip enable-2	EEPROM chip enable. Active a "Low" To be pulled up to the "VDD" at 47kΩ
13	SL	I/O	signal level	Received FM/AM signal level (strength) output. Connect the specified load resistor and capacitor (10k Ω + 39k Ω //4,700pF)
14	DI/DO	I/O	data input/ data output	Data input/Data output To be pulled up to the "VDD" at 47kΩ
15	CK	I	clock	Clock input To be pulled up to the "VDD" at 47kΩ
16	CE1	I	chip enable-1	AF·RF chip enable. Active at "High" To be grounded at 47kΩ
17	NC			Not used
18	LDET	O	lock detector	Active at "Low". To be pulled up to the "VDD" at 47kΩ
19	CREQ	I	current request	Active at "Low". To be grounded at 47kΩ
20	NC			Not used
21	COMP	O	composite signal	FM composite signal output. r out < 100Ω
22	VCC		power supply	Analog section power supply pin.DC 8.4V +/- 0.3V
23	LOCH	I	local high	FM local high pin. When seeking local high, apply 5V together with "LOCL".
24	FMLOCL	I	FM local low	FM local low pin. When seeking local low, apply 5V to the base of the NPN transistor with which the specified resistor is being connected to the emitter. Keep it open in case of ordinary marketed models.
25	LOCL	I	local low	FM/AM local low pin. When seeking local low, apply 5V to the base of the NPN transistor. Since this pin is exclusive for AM when the FMLOCL is in use, do not drive it under FM.
26	RFGND		RF ground	Grounding for the antenna section.
27	FMANT	I	FM antenna input	FM antenna input. 75Ω. Surge absorber (DSP-201M-S00B) is necessary.
28	AMANT	I	AM antenna input	AM antenna input. High impedance. Connect to the antenna through an L (LAU type) of 4.7μH.To cope with the power transmission line hums, insert a series circuit consisting of an L (a coil of about 100mH) + R (a resistor of 470 Ω to 2.2kΩ) between the GND.

7.2.2 DISPLAY

● **CAW1628**

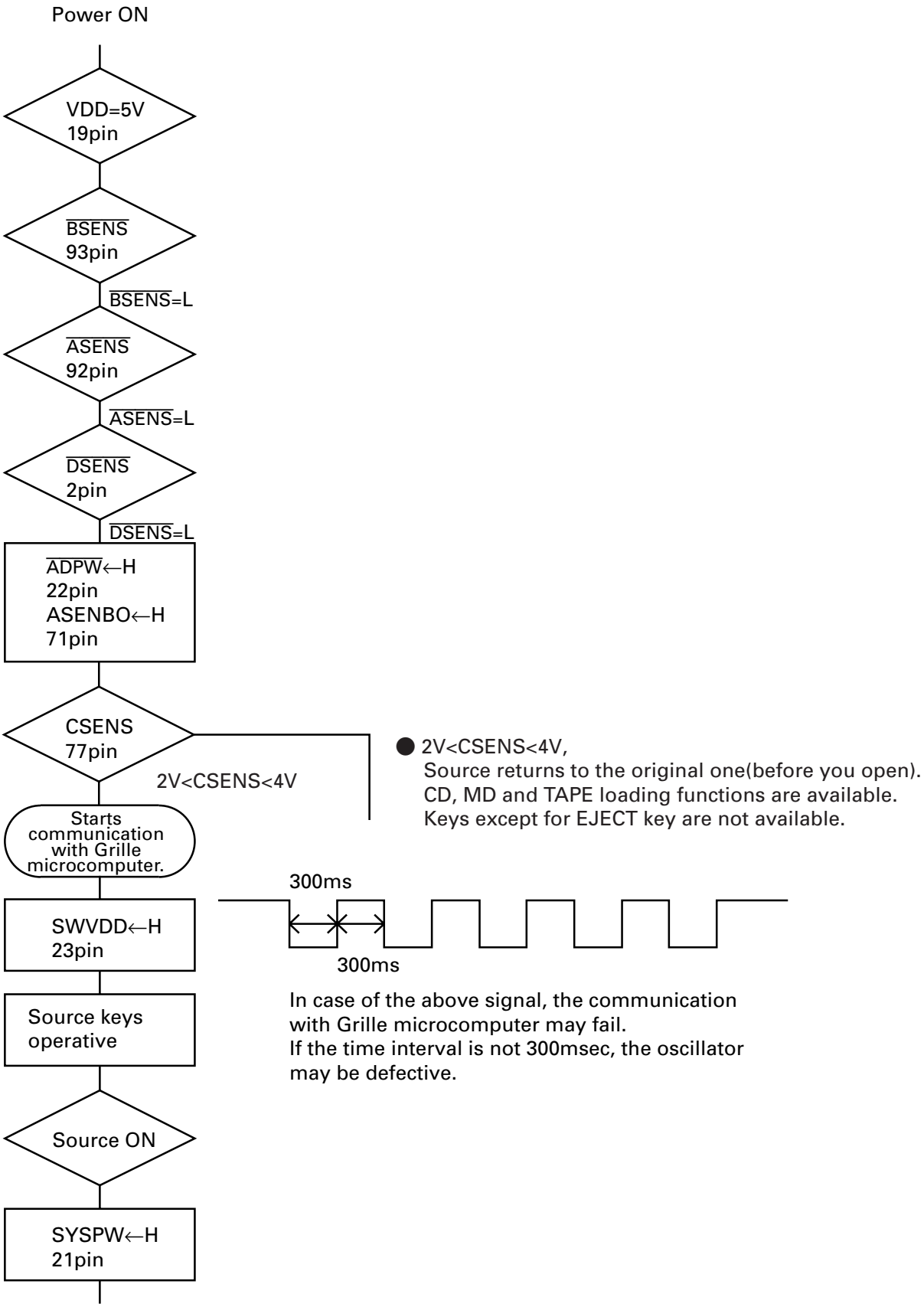


SEGMENT



COMMON

7.3 OPERATION FLOW CHART



Completes power-on operation.
(After that, proceed to each source operation)

7.4 CLEANING

A Before shipping out the product, be sure to clean the following portions by using the perscribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning pater : GED-008

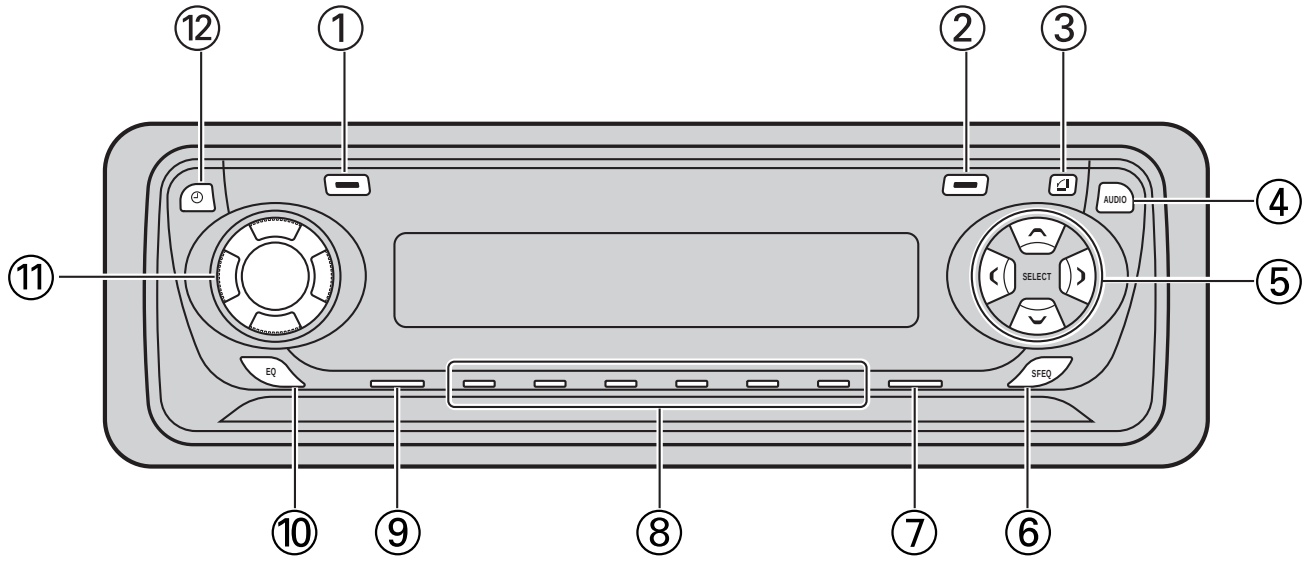
B

C

D

8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS



What's What

Head unit

① DISPLAY button
Press to select different displays.

② FUNCTION button
Press to select functions.

③ OPEN button
Press to open the front panel.

④ AUDIO button
Press to select various sound quality controls.

⑤ ▲/▼/◄/► buttons
Press to do manual seek tuning, fast forward, reverse and track search controls. Also used for controlling functions.

⑥ SFEQ button
Press to select a natural sound with presence.

⑦ BAND/ESC button
Press to select among three FM or AM bands and cancel the control mode of functions.

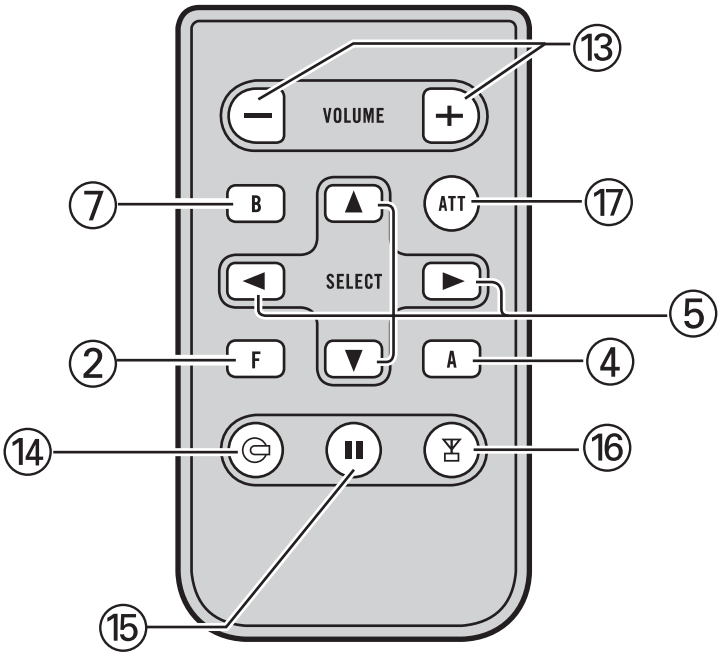
⑧ 1–6 (PRESET TUNING) buttons
Press for preset tuning and disc number search when using a multi-CD player.

⑨ SOURCE button
This unit is switched on by selecting a source. Press to cycle through all of the available sources.

⑩ EQ button
Press to select various equalizer curves.

⑪ VOLUME button
When you press VOLUME, it extends outward so that it becomes easier to turn. To retract the VOLUME, press it again. Rotate to increase or decrease the volume.

⑫ CLOCK button
Press to switch clock display on or off.



Remote control

A remote controller that enables remote operation of the head unit is supplied. Operation is the same as when using the button on the head unit. See the explanation of the head unit about the operation of each button with the exception of ATT, which is explained below.

② FUNCTION button
Press to select functions.

⑬ +/– button
Raise or lower the volume.

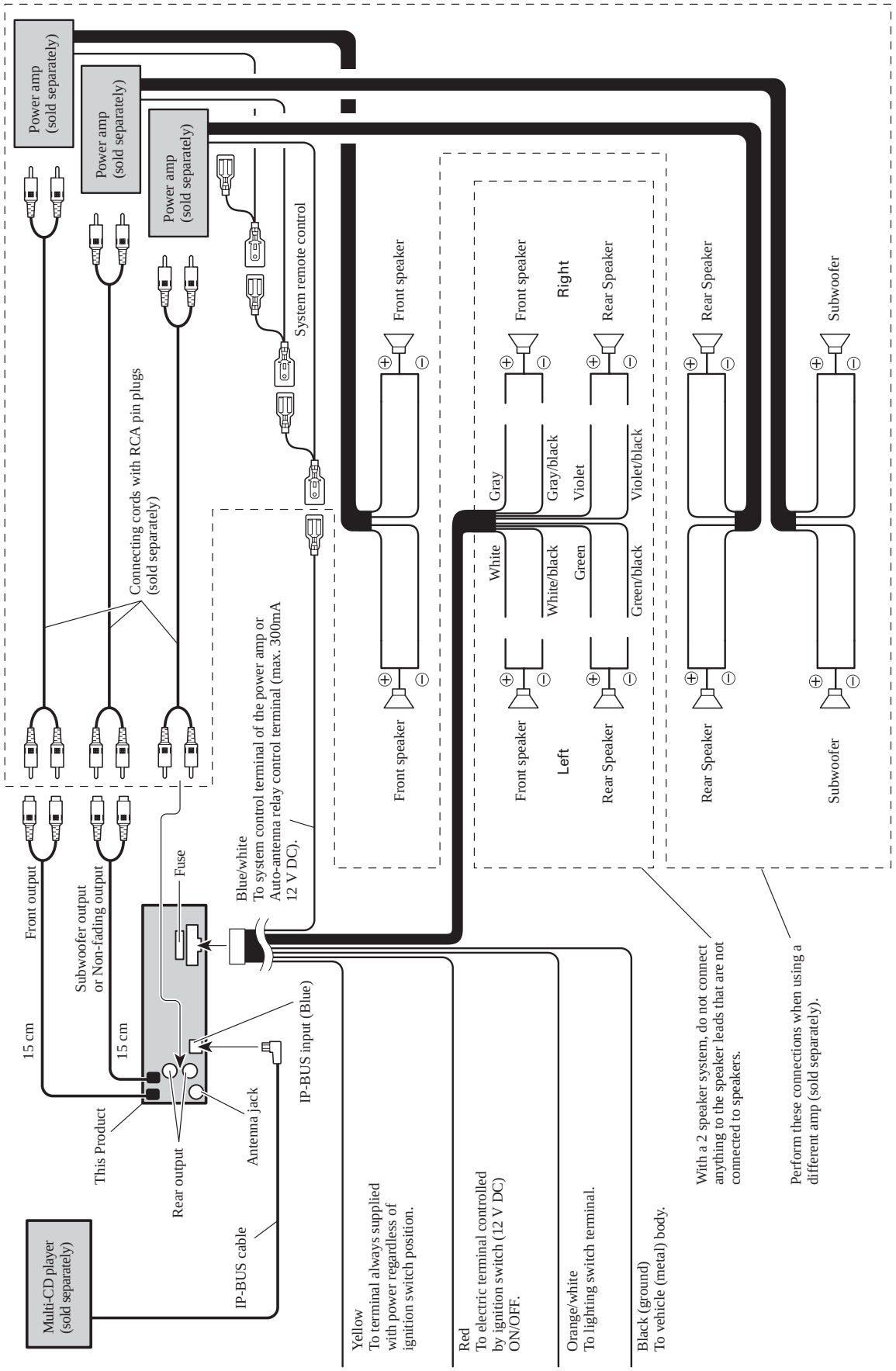
⑭ CD button
Press once to select a CD.

⑮ PAUSE button
Press once to pause play.

⑯ TUNER button
Press once to select a tuner.

⑰ ATT button
Press to quickly lower the volume level, by about 90%. Press once more to return to the original volume level.

● CONNECTION DIAGRAM



8.2 SPECIFICATIONS

General

Power source ..... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Backup current.....Less than 5mA
Dimensions (W × H × D):
(DIN)
Chassis ..... 178 × 50 × 157 mm (7 × 2 × 6-1/8 in)
Nose ..... 188 × 58 × 19 mm (7-3/8 × 2-1/4 × 3/4 in)
(D)
Chassis ..... 178 × 50 × 162 mm (7 × 2 × 6-3/8 in)
Nose ..... 170 × 46 × 14 mm (6-3/4 × 1-3/4 × 1/2 in)
Weight ..... 1.5 kg (3.3 lbs)

Amplifier

Continuous power output is 22 W per channel min. into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output 50 W × 4, 50 W × 2 ch/4 Ω + 70 W × 1 ch/2 Ω (for Subwoofer)
Load impedance ..... 4 Ω (4 – 8 Ω [2 Ω for 1 ch] allowable)
Preout maximum output level/output impedance ..... 2.2 V/1 kΩ
Equalizer (3-Band Parametric Equalizer)
(Low) ..... Frequency: 40/80/100/160 Hz
Q Factor: 0.35/0.59/0.95/1.15 (+6 dB when boosted)
Level: ±12 dB
(Mid) ..... Frequency: 200/500/1k/2k Hz
Q Factor: 0.35/0.59/0.95/1.15 (+6 dB when boosted)
Level: ±12 dB
(High) ..... Frequency: 3.15k/8k/10k/12.5k Hz
Q Factor: 0.35/0.59/0.95/1.15 (+6 dB when boosted)
Level: ±12 dB
Loudness contour
(Low) ..... +3.5 dB (100 Hz), +3 dB (10 kHz)
(Mid) ..... +10 dB (100 Hz), +6.5 dB (10 kHz)
(High) ..... +11 dB (100 Hz), +11 dB (10 kHz) (volume: –30 dB)
Tone controls
(Bass) ..... Frequency: 40/63/100/160 Hz
Level: ±12 dB
(Treble) ..... Frequency: 2.5k/4k/6.3k/10k Hz
Level: ±12 dB
HPF(DEH-P440/XN/UC)
Frequency ..... 50/80/125 Hz
Slope ..... –12 dB/oct
Subwoofer output
Frequency ..... 50/80/125 Hz
Slope ..... –18 dB/oct
Gain ..... ±12 dB

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format:
Sampling frequency 44.1 kHz
Number of quantization bits ..... 16; linear
Frequency characteristics ..... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz) (IHF-A network)
Dynamic range ..... 92 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.9 – 107.9 MHz
Usable sensitivity ..... 9 dBf (0.8 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity 15 dBf (1.5 µV/75 Ω, mono)
Signal-to-noise ratio ..... 70 dB (IHF-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 – 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)
Selectivity ..... 70 dB (2ACA)
Three-signal intermodulation (desired signal level) ..... 30 dB (two undesired signal level: 100 dBf)

AM tuner

Frequency range ..... 530 – 1,710 kHz (10 kHz)
Usable sensitivity ..... 18 µV (S/N: 20 dB)
Selectivity ..... 50 dB (±10 kHz)

Infrared remote control

Wavelength ..... 940 nm ±50 nm
Output ..... typ; 12 mw/sr per infrared LED

Note

- Specifications and the design are subject to possible modifications without notice due to improvements.